319 / DECEMBER 1999

THE NI
NEW INTERNATIONALIST

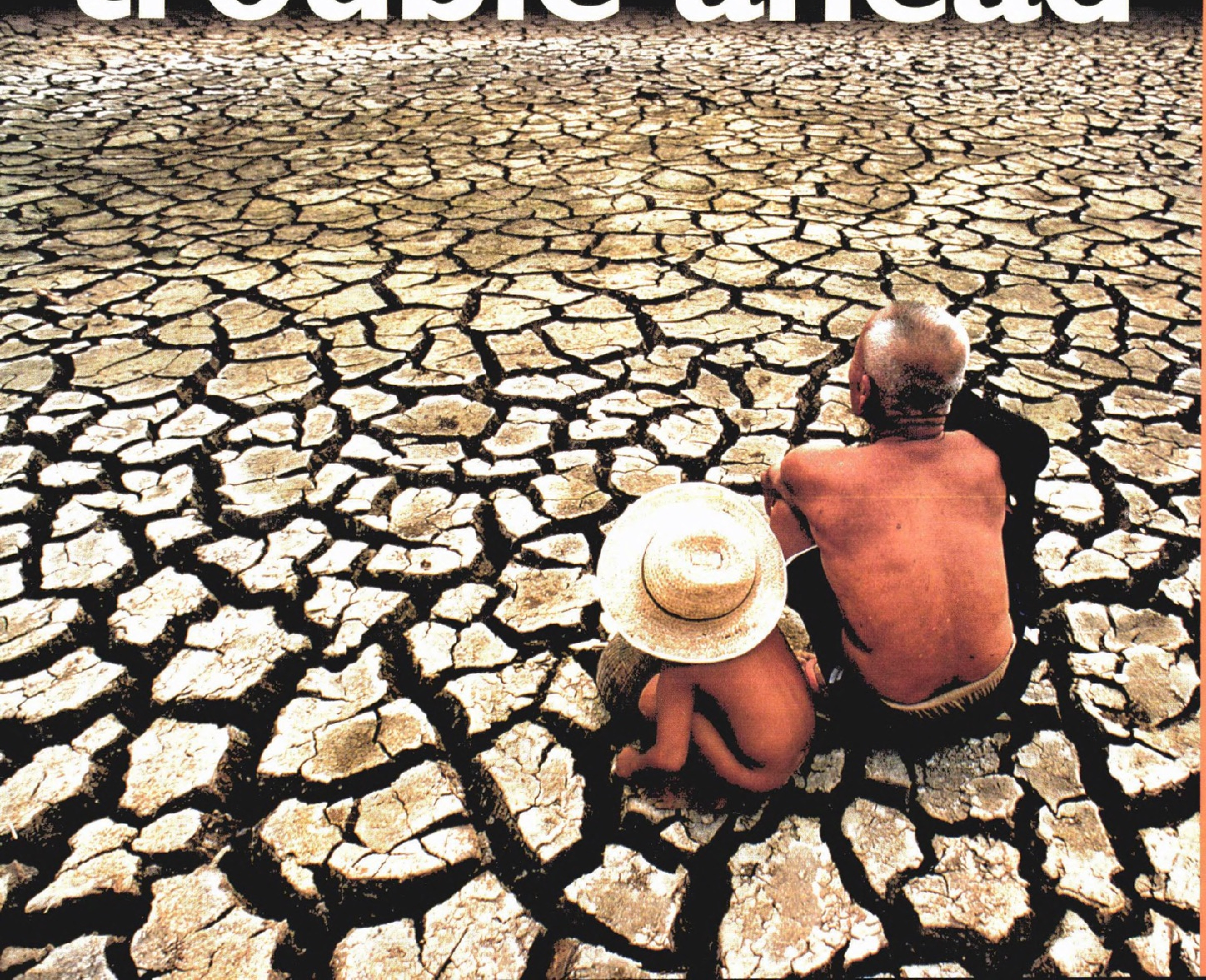
**Why the toad's alert matters**

**World Bank: stoking the flames of global warming**

**The psychology of seasons**

**Foul weather, filthy lies and fatcats**

# Weather report: trouble ahead



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THE PEOPLE, THE IDEAS, THE ACTION IN THE FIGHT FOR WORLD DEVELOPMENT

## COMING NEXT MONTH

# Blueprint for change

## Redesigning the global economy

BLAIR SEITZ

The world economy lurches from crisis to crisis bound by the Bretton Woods financial system that was put in place more than 50 years ago. In the meantime the global economy has changed profoundly. Globalization, aided by open markets in trade and investment, has undermined the nation state and turned the world over to the depredations of unregulated capital. Instead of development and progress we have a world plagued by financial chaos, human suffering and social disintegration.

The search is now on for a new economic architecture to replace the crumbling edifice of the old Bretton Woods system. In this issue we offer our blueprint for a better way.

- ◆ **The IMF is dead, long live the IMF** – we can't live with it. Can we live without it?
- ◆ **A citizen's investment treaty** – what we can do to combat corporate rule.
- ◆ **Mr Tobin's tax** – tearing a strip off the currency speculators.
- ◆ **Africa's hidden killers** – Zambians are dying to pay their debts.
- ◆ **Protecting the global environment** – learning from the World Trade Organization.
- ◆ **The Lugano Report** – a modest proposal to save capitalism in the next century.
- ◆ **Taming the markets** – what a global central bank could do and why we need one.

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**The New Internationalist exists to report on the issues of world poverty and inequality; to focus attention on the unjust relationship between the powerful and powerless in both rich and poor nations; to debate and campaign for the radical changes necessary within and between those nations if the basic material and spiritual needs of all are to be met; and to bring to life the people, the ideas and the action in the fight for world development.**

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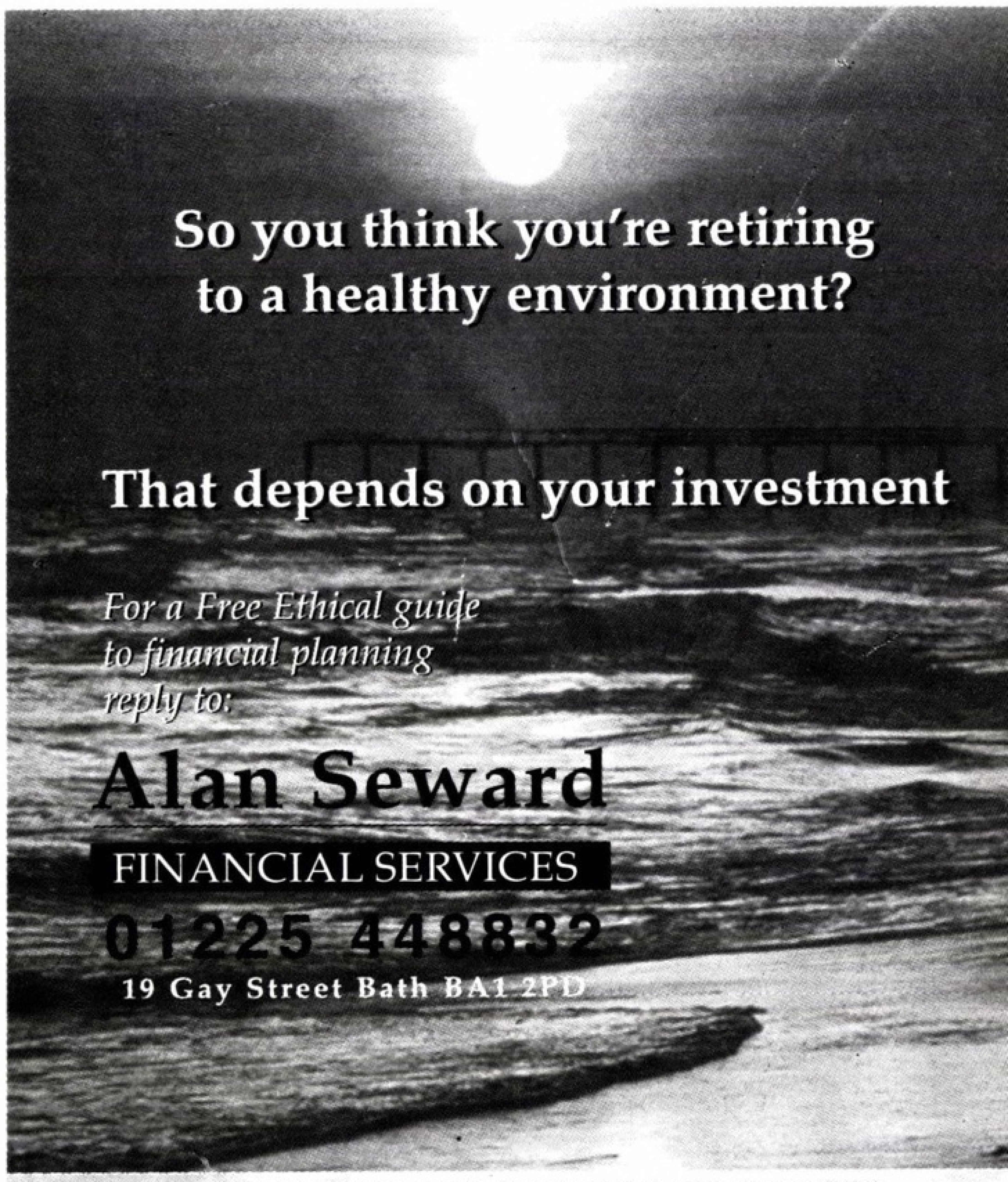

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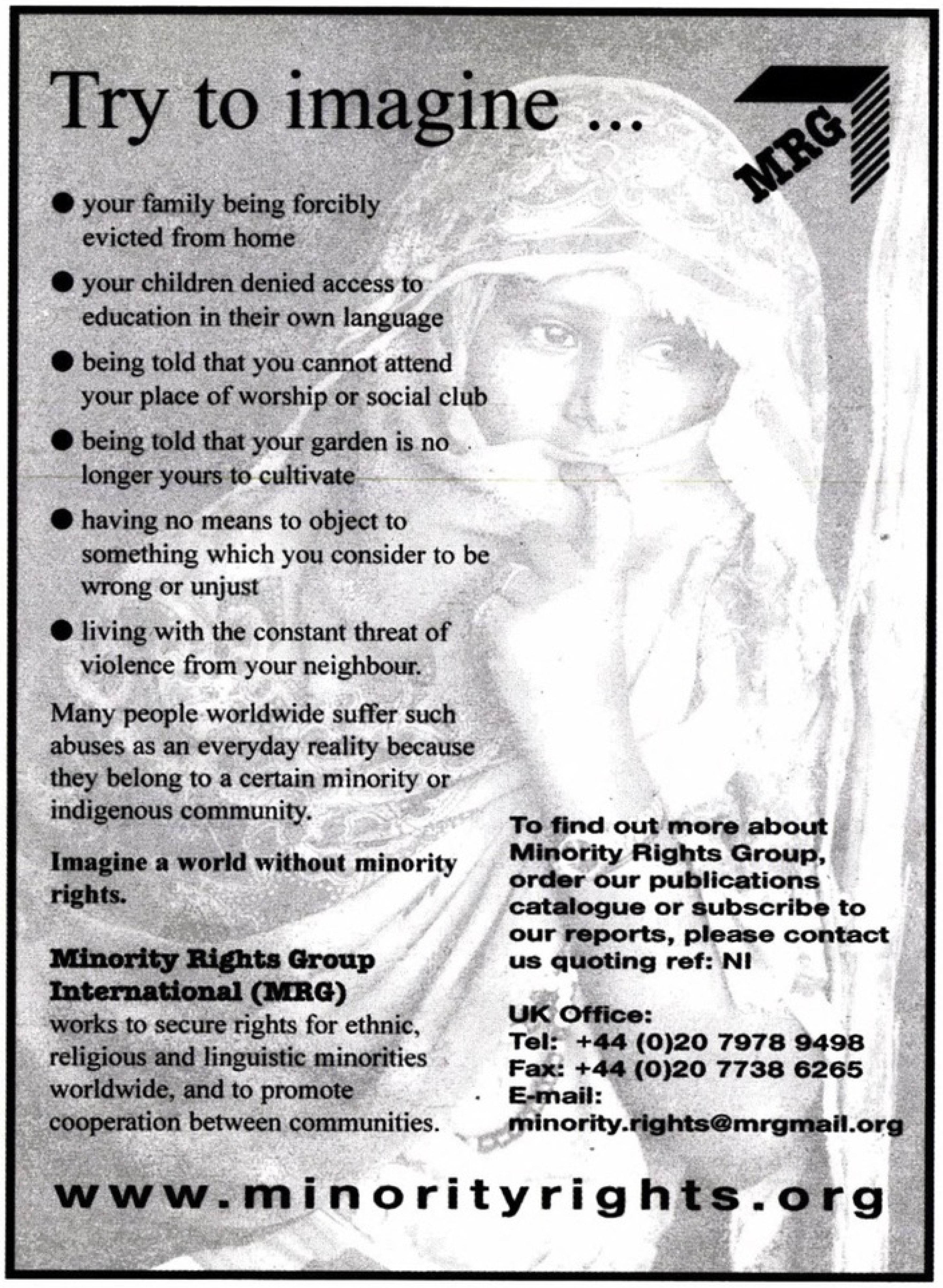

Try to imagine ...

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- your family being forcibly evicted from home
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- being told that your garden is no longer yours to cultivate
- having no means to object to something which you consider to be wrong or unjust
- living with the constant threat of violence from your neighbour.

Many people worldwide suffer such abuses as an everyday reality because they belong to a certain minority or indigenous community.

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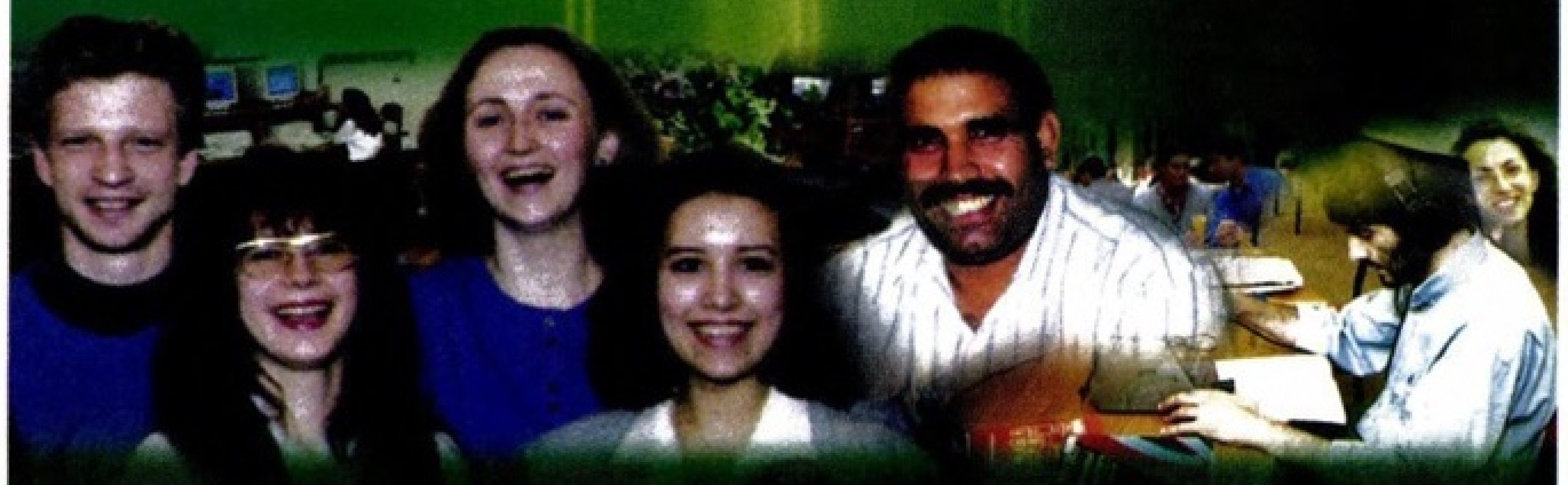

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**To Secretary-General of the United Nations, Kofi Annan:** As a UN Non-member State Permanent Observer, the Holy See enjoys unique status, often as a voting partner, with countries at UN conferences. Granting governmental privileges to what is in reality a religious body is questionable statecraft. While the Holy See — the government of the Roman Catholic church — has made positive contributions through the United Nations to peace and justice, this should not be used to justify granting the status of a state to a religious institution. Governmental participation in the UN should be reserved to actual states. The world's religions have been well represented through non-governmental organization status. With NGO status, the Roman Catholic church would be able to continue its participation in the UN — like the World Council of Churches — without ambiguity or privilege. We call on you to open an official review of the Holy See's status at the UN.

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FRONT COVER PHOTO: UNCHARACTERISTIC DROUGHT STRIKES THAILAND **KITTPREMPOOL-UNEP / STILL PICTURES**
MAGAZINE DESIGNED BY **IAN NIXON**.

THIS MONTH'S **THEME**

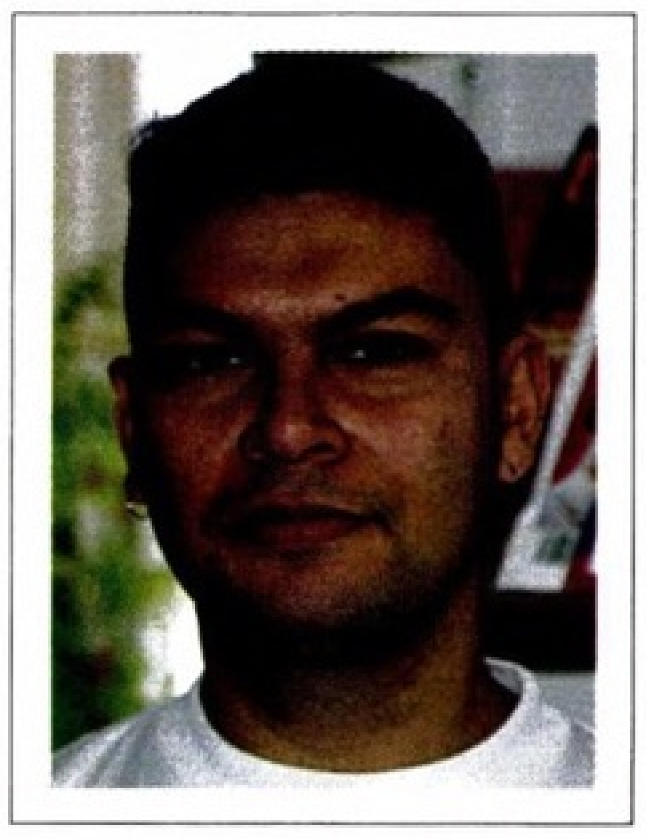
# Weather

FROM THIS MONTH'S **EDITOR**

THE English language has a lot to answer for. Or maybe it's the way some people's sense of humour is wired up. Because as soon as friends knew I was working on this issue the lame quips started – 'Whither weather?', 'Weather or not?', 'Feeling under the weather yet?' Oh dear...

But it was a small price to pay in exchange for getting the chance to tackle a subject that has been close to my heart for as long as I can remember.

As a child, daytime was when the weather 'happened'. Waking after a summer night's inky sleep, the first thing to register was the morning air moving across skin. If it was dry, it seemed to reach down your pores and suck the moisture out. And if humid, the first prickle of perspiration would begin. We dragged our lightweight beds out into the open during the summer months in those days.



But that would change with the arrival of the mighty Indian monsoon. You smelt it damping down the dust first and then saw the clouds roll ever closer and a wall of rain advance. I'd be waiting outside, along with all the other kids in my neighbourhood, itching to get a good soaking. There'd be much shrieking and rolling about in mud, with my parents scolding from the safety of their verandah.

Once it had settled in, it would rain for days on end and the streets would begin, slowly, to flood. After a couple of days of grudgingly cycling through knee-high water, school would eventually be postponed. Saved from the tedium of the robotic regime at my school, I'd retreat into a novel, while all around the rain kept thrumming. At that age the plight of my home town's slum citizens whose makeshift dwellings afforded little shelter was far from my mind.

Living now in European climes, I am fascinated by the unpredictability of the weather. You never quite know what you are going to wake up to – even if, like me, you watch the weather forecast as if your life depended on it.

Recently I also find myself looking uneasily for other omens in the weather – along with millions of people around the world who share that unease. Because, of late, it's been doing strange things. More so than usual, more violently than usual, with a much higher cost than usual. Perhaps more unsettling is the knowledge that we know why this is so and that we are probably responsible. Whereas day-to-day predictions often leave egg on the weather forecasters' faces, longer-term trends seem to be confirmed with each passing year. Our lives could well depend on the forecast.

Dinyar Godrej

*Dinyar Godrej*
*for the **New Internationalist** Co-operative*

# Letters

**The New Internationalist welcomes your letters. But please keep them short. They may be edited for purposes of space or clarity. Include a home telephone number if possible and send your letters to the nearest editorial office. The address and e-mail are inside the front cover.**

## Passionate plea

Congratulations on one of the best issues ever! Although it is a cliché to say so, your magazine on bananas (**NI 318**) really was a passionate plea which got to the core of the matter.

I worked a while in an organization for the promotion of organic agriculture in Germany which opened my eyes to the existence of this grave ecological and economic problem.

NI
NEW INTERNATIONALIST
The big banana split
The People's Banana!

I have decided to sacrifice my copy and send it to my former colleagues. I hope they will be encouraged by the contents to step up their efforts in Germany.

**Catherine Lodge**
Munich, Germany

## Ridiculous claims

In his letter (**NI 317**) Scott Ratzan fails to address our factual critique of his writings. He submitted a simply rabid and misleading opinion piece to the *Wall Street Journal*. In it, he stated '... the CJD-mad cow hypothesis turned out to be wrong. We still don't know how humans contract CJD. But what is clear is that people don't get it by eating meat from cows or lamb... Mad cow disease now joins the Dalkon Shield, electromagnetic fields, Alar, breast implants and other spurious health hazards.'

We defy Ratzan to cite a single peer-reviewed scientific study in the last two years which supports his claim that there is no link between mad cow disease and vCJD (or nvCJD, to use the most common designation for the new disease).

His gibberish is picked up by groups like Steve Milloy's 'junk science' home page, and Elizabeth Whelan's American Council on Science and Health, and trumpeted as 'the truth'.

We can see why Ratzan is upset; we'd be embarrassed too if we authored such pap and it became grist for the mill of right-wing propagandists. But he should blame himself, not us, for his own ridiculous claims.

**Sheldon Rampton** and **John Stauber**
Madison, Wisconsin, US

## Living in shadow

I am writing regarding the article 'Death of a firefighter' ('Letter from Lebanon' **NI 316**). Also in this issue comparisons were made between treatment of the Iraqi Government and the Israeli Government by the UN, the US and Britain.

There appears to be an imbalance in the treatment of Israel compared with other nations.

Israel has occupied South Lebanon since the end of the war in 1992. It continues daily bombardments and killings in the South and recently tried to move further into Lebanon. The Hizbollah are deemed a terrorist organization but are the Israelis any better? The bombings in Beirut highlight the aggression of Israel against innocent Lebanese people yet there was no worldwide media coverage of the atrocity. Why is news like this kept from us? Israel needs to move from South Lebanon but until there is pressure from outside they will continue to be the aggressors.

In the West we are afraid to speak out against Israel in fear of being called anti-semitic. To criticize the antics of Israel is not being anti-semitic. It is time we stopped being afraid to criticize Israel. The holocaust of the Second World War will never be forgotten but we cannot always live in its shadow, afraid to speak.

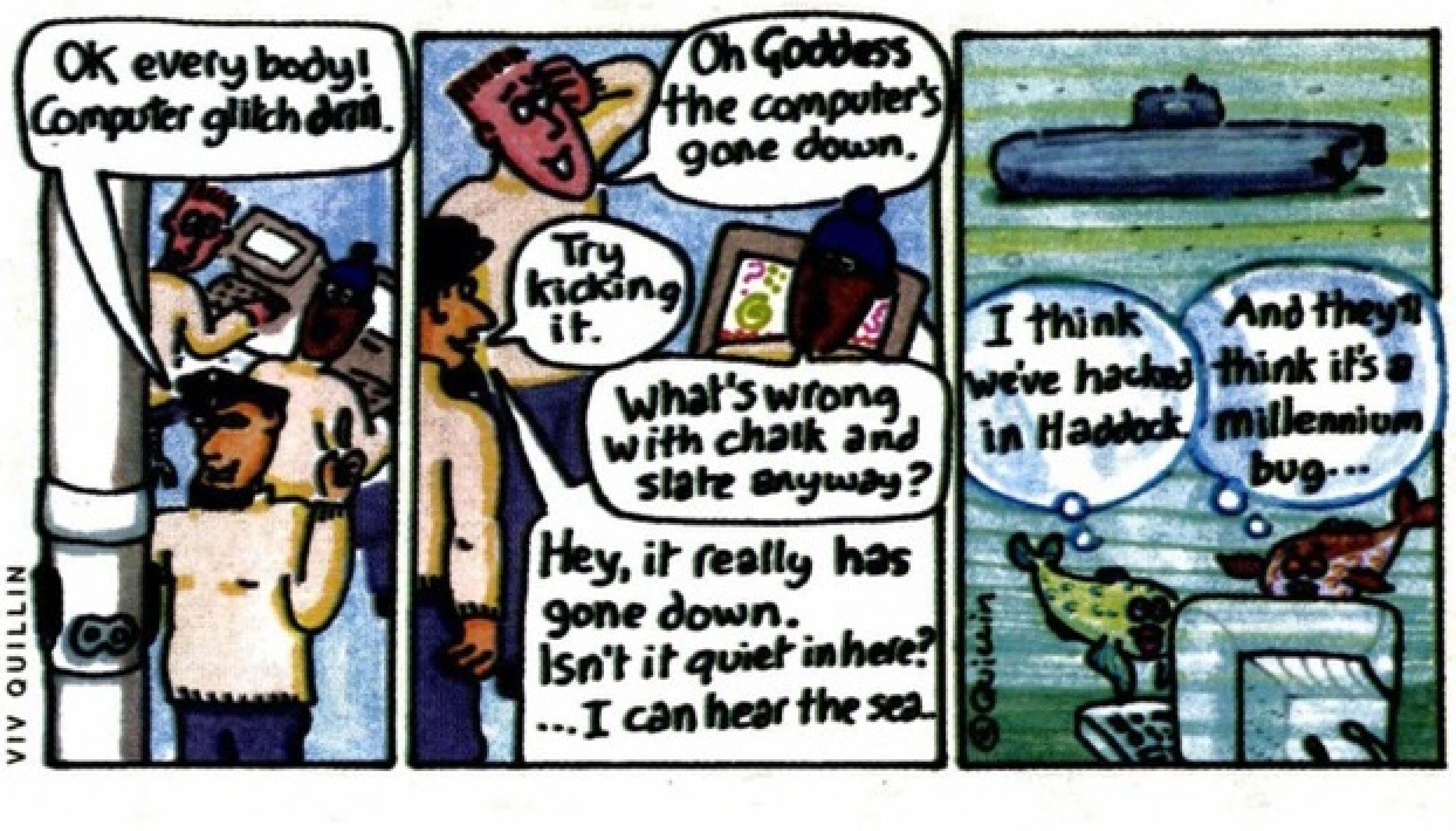
Having recently returned from a year living in Lebanon, I understand that this small country will never be permitted to move into the future while it is still shackled by Israel and Syria who use it as their political playing field.

**CarolAnne Quigley**
Wishaw, Scotland

## Military preparedness

I was disappointed to read your article 'Red Alert' in the August issue (**NI 315**). It vastly overstates the military's unpreparedness for Y2K. One particular question asks 'Aren't most nuclear weapons carried on submarines these days?' As someone who served aboard a submarine for seven years, I know that a submarine is fully capable of raising its periscope without the use of computers. Also, a submarine does not 'plummet to the ocean floor' when it's nuclear reactor 'turns off'. A submarine has several methods of depth control independent of its reactor. Submarine crews constantly conduct drills for many tactical scenarios (as do all military units), including ones where the submarine must operate under degraded conditions, be they caused by battle damage, accident, sabotage, computer glitches, etc.

**James Williams**
Tempe, Arizona, US


OK every body! Computer glitch drill.
Oh Goddess the computer's gone down.
Try kicking it.
What's wrong with chalk and slate anyway?
Hey, it really has gone down. Isn't it quiet in here? ...I can hear the sea.
I think we've hacked in Haddock.
And they'll think it's a millennium bug...
VIV QUILLIN
©Quillin

## Racism

After reading a particularly unpleasant article on asylum seekers in the British press, I remembered a surprising omission in your otherwise excellent propaganda issue (**NI 314**). The connection between racism and propaganda was totally ignored.

Racism is often seen as an aberration of a minority element (ie the violent). When fighting it there is a tendency to concentrate on specific cases or groups without considering the undercurrents that maintain preconceptions, particularly within the media.

I feel a piece on this subject would have been well timed.

**Austin Lloyd**
People and Planet
Birmingham, England

## Gul Aslan's release

I am pleased to inform readers that Gul Aslan, the journalist mentioned in 'Ataturk's Children' ('Endpiece' **NI 315**), was released on 20 August 1999, after the piece was published. She was released without relation to the earlier amnesty of many convicts.

Gul Aslan was just one of many such political prisoners that our organization has campaigned for in Turkey. The situation continues to deteriorate. Fifty-one people who took part in a peaceful demonstration against the headscarf ban in universities in February this year face the death penalty if found guilty of 'trying to overthrow the Turkish system'. One of those being tried is Huda Kaya, another journalist, and her three daughters. The evidence for their crimes includes the fact that one daughter was present at the demonstration in her capacity as a reporter, and the other two read out poetry in front of the Governor's building in Malatya, where the demonstration took place. One of the poems was entitled, 'Song of Freedom'.

The highly publicized Ocalan trial, and the tragedy of the earthquake have masked the above and many such cases from international scrutiny.

As a human-rights organization we cannot stress how important it is that those concerned give protest against abuses through a telephone call, e-mail or letter. It does work. It can get people released, and it can save lives.

**Massoud Shadjareh**
Islamic Human Rights Commission,
London, England

## Disney disgrace

I would like to congratulate you on this issue (**NI 308**). It exposes the raw and sheer disgusting work that people in Haiti have to put up with. I mean people complain about making only $5.00 an hour here but these people are making 42 cents at the most. This is a complete disgrace. I may only be 16 but I think it is so sad that US are exploiting people when they can clearly afford to pay them basic wages. I have never been to Disney Land and I have now made up my mind that I will never go. This has really opened my eyes.

**Sophie Pouwels**
Gawler East, South Australia

## Poverty correction

In your ***Poverty*** issue (**NI 310**). the contact information for the Ontario Coalition Against Poverty is incorrect.

*For the Kitchener-Waterloo chapter:*Tel: (519) 220-2159
Fax: (519) 746-4096
E-mail: kwocap@tao.ca
Web:
www.web.net/~gccwat/ocap
*For the Toronto chapter:*
Tel: (416) 925-6939 Fax: (416) 966-8759 E-mail: ocap@tao.ca
Web: www.tao.ca/~ocap

**Kevin Smith.**
Kitchener-Waterloo, ONT, Canada

**The views expressed on the letters page are not necessarily those of the New Internationalist.**

Letter from Lebanon

# English attack

**Reem Haddad** reports on some linguistic twists and turns

My parents, like other middle-aged couples in Lebanon, are having a hard time keeping up with the language in the country.

'Mom,' I told her the other day, 'I am *mdaprasseh.*'

Translation: I am depressed. My mother gave me a blank look.

'Are you speaking to me in Arabic or English?' she asked.

Actually, both. English words are being Arabized by the hundreds and judging by the strange looks Arab tourists give us this phenomenon is only found in Lebanon.

Much to Arabic linguists' surprise, this *Arabinglisi* (Arabic English) made its appearance after the end of the war when waves of Lebanese returned from the United States and the United Kingdom and, unable to speak Arabic very well, began mixing the languages together.

'I am so angry at this new colleague at work,' my friend told me the other day. 'I have *akkasit alleiha*.' *Akkasit*: Arabinglisi word meaning to put an 'X' on this person. *Alleiha*: Arabic for 'her'. In other words, my friend will no longer speak to this unfortunate colleague.

Even gas station attendants eagerly ask if we want our cars *fawwaleh* (fueled). Computer scientists advise to frequently *sayyiv* (save), football players are urged to *shawit* (shoot) goals, and police warn about the dangers of *dawbil* (to double, or overtake) other cars.

The Lebanese have always been known for their use of foreign languages – French in particular. Everyone thinks there are too many *camions* (trucks) in the country, uses *ascenseurs* (elevators) and eats *fraises* (strawberries). Some French words were even Arabized like *narvasit* ('*enerve*' in French) or a car's *ashekmon* ('*echappement*' or exhaust). But never has the country seen such an attack of English words. Strangely enough, the country's Arabic linguists have yet to express any concern.

'This is inevitable when dealing with English, a very popular language,' said one expert.

DJ's on radio stations – many of them American, British or Australian nationals – seem to have picked up on the trend and converse contentedly to the thousands of listening teenagers.

Lebanese seem to adore using French or now more commonly English words at every opportunity. Few shopkeepers put up signs in Arabic only. They either have the name of the shop translated or simply use English. But many times this results in unfortunate shop signs such as 'Pussy Toys' or 'Slimy Beach'.

While the Lebanese may be revelling in their glossary of English or French words, foreigners who came to the country to learn Arabic are definitely not enjoying the phenomenon. My fiancé, for one, a British national who has lived in the country for the past five years, can still only manage a few Arabic words.

'How can I learn it if everybody insists on speaking to me in English?' he asks. No matter how many times he enrols in Arabic courses, the results are the same. Grocers, butchers and shopkeepers don't give him the chance to practise his new words.

'If anything they want to practise their English skills with me,' said my frustrated fiancé.

After a while, foreigners figure out that the only way to learn Arabic – real Arabic – is to live in neighboring Syria for a while. Robert Tuttle, an American now residing in Lebanon, did just that and spent three years in Damascus until he mastered the language.

He left Syria with strong Arabic skills including the correct pronunciation. In Lebanon, however, he found himself only speaking English.

'At this rate, I'm going to forget everything I learned,' he told me.

So now, once a month for a week, Robert refuses to speak anything but Arabic.

My questions in English are duly answered in Arabic and grocers have to forgo practising their newly acquired English words on Robert.

But to survive in Lebanon, Robert will also have to learn the *Arabinglisi* or he'll find himself *m'angar* (angry) at the Lebanese when they fail to understand his pure Arabic. ■

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**Reem Haddad** is a reporter for the *Daily Star* in Beirut.

AFRICA

# The lion lies down

**Julius Nyerere comes to the end of an anti-colonial life**

THE death from leukaemia of Julius Nyerere at the age of 77 deprives independent Africa of one of its most intelligent, perceptive and determinedly radical leaders. He was an inspiration not just to Africans but also to people all over the world who interpreted 'world development' as meaning a fairer global economic system.

Having led Tanganyika to its independence from Britain in 1961, Nyerere was a prime mover in creating the Organization of African Unity in 1963 and oversaw Zanzibar's incorporation into the new Republic of Tanzania. His 1967 Arusha Declaration was a ringing statement of an alternative path to development based on socialism and self-reliance.

Nyerere's Tanzania became a magnet for anti-colonial activists and thinkers from all over the world – especially for the resistance movements (and future leaders) of South Africa, Zimbabwe, Angola and Namibia. By the time he retired as President in 1985 his alternative economic strategy had hit the buffers of debt and structural adjustment. But he remained deeply revered by Tanzanians and took his activism to the international level, first as head of the South-South Commission aiming to strengthen Third World unity and latterly in seeking political settlements that would end the conflicts in Burundi and DR Congo.

Nyerere was interviewed in the very first issue of the **NI**'s forerunner, *The Internationalist*, in 1970. It was fitting therefore that he gave one of his last interviews to the *New Internationalist* special issue on *The Radical Twentieth Century* (**NI 309**), looking back thought-provokingly over an anti-colonial life.

In the course of that interview we asked Nyerere why his alternative strategy for development had foundered on the rocks. He would have been happy for his answer – combative, provocative, insightful – to have served as an epitaph:

'I was in Washington last year. At the World Bank these people asked me to speak. Then they asked me the questions. The first question they asked was how did you fail? I responded that we took over a country with 85 per cent of its adult population illiterate. The British ruled us for 43 years. When they left, there were 2 trained engineers and 12 doctors. This is the country we inherited.

'When I stepped down there was 91-per-cent literacy and nearly every child of school age was in school. We trained thousands of engineers and doctors and teachers.

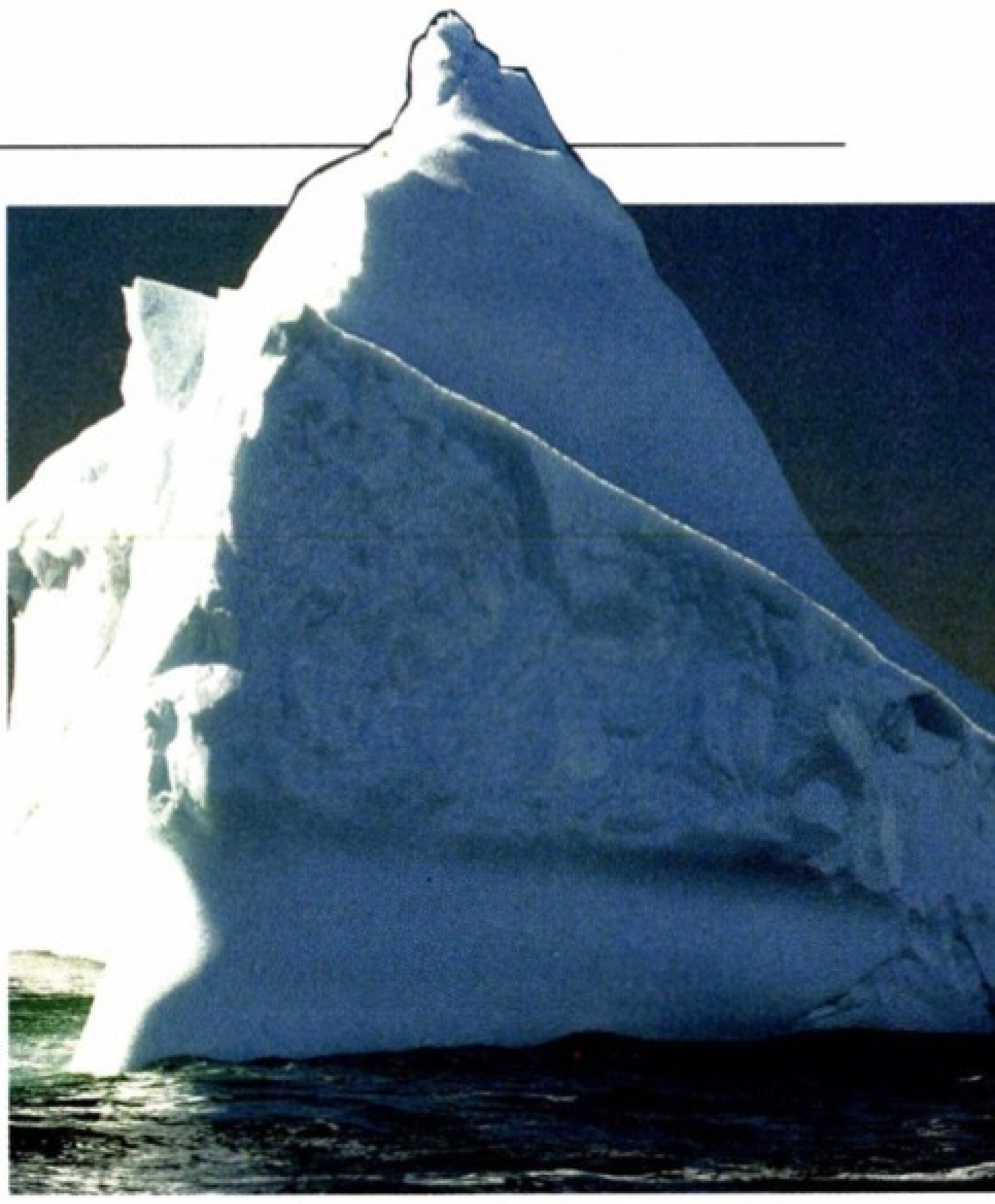
'In 1988 Tanzania's per-capita income was $280. Now, in 1998, it is $140. So I asked the World Bank people what went wrong. Because for the last ten years Tanzania has been signing on the dotted line and doing everything the IMF and the World Bank wanted. Enrolment in school has plummeted to 63 per cent and conditions in health and other social services have deteriorated.

'I asked them again: "What went wrong?" These people just sat there looking at me. Then they asked what could they do? I told them have some humility. Humility – they are so arrogant!'

**Chris Brazier**

Alternative icons at large: Nyerere in his prime visiting Castro's Cuba in 1974.

CAMERA PRESS



VINCENT BRETAGNOLLE / STILL PICTURES

## White alert

A giant iceberg that has drifted into the Drake Passage between Argentina and Antarctica is causing concerns for ships navigating the area. Called B10-A, the iceberg is about 40 kilometres wide and 80 kilometres long and is littering the seas with smaller pieces of ice which are hard to detect and dangerous for ships. 'They can cut through a steel ship like you would cut butter with a knife,' says Jeff Andrews from the US-based National Ice Centre. Scientists estimate that the B10-A iceberg stands at 300 feet above the water's surface and 1,000 feet below the sea.

*Down to Earth* Vol 8 No 9

## Excited delirium

**Deaths in custody that are blamed on police using excessive force may be due to the prisoner's cocaine abuse, says Steven Karch, assistant medical examiner of the City and Council of San Francisco. He is convinced that many people who die in custody are suffering from 'excited delirium' (ED) which can be caused by the long-term use of stimulants such as cocaine. Unless treated quickly, usually by packing the sufferer in ice to reduce their body temperature, patients often die of cardiac arrest. Last year researchers found that 18 out of 21 people recorded as dying from ED were under arrest. Karch claims there is often little that police can do to prevent ED death: 'These individuals are very sick and even with optimal medical care they don't stand much chance.' He says the recent rise in deaths in custody in Britain may be linked to increased nationwide cocaine use. But campaigners on the issue of deaths in custody are sceptical. 'Over the years, "excited delirium" has been a kind of smokescreen for deaths of people held under restraint,' says Deborah Coles of Inquest, a London-based group.**

*New Scientist* Vol 163 No 2205

## Spot the difference

**The US and Saudi Arabia share the dubious accolade of having dramatically boosted their use of the death penalty. In 1999 the US state put to death more people than in any other year since 1954. By October, 78 death-row inmates had been executed and the number was expected to exceed 100 by the end of the year. Saudi Arabia beheaded 87 people by October 1999, compared with 29 in the previous year. The Saudi state executes murderers, drug smugglers and rapists in the name of sharia law. The US kills its citizens in the name of 'American law and order'.**

Amnesty International, October 1999.

## Explosive flows

India's victory over the Pakistani forces in Kargil is a defeat for the environment. Explosives used in heavy shelling have contaminated the snow and rivers, says one observer: 'It is going to be very difficult for the army personnel posted in this area to survive. It will be worse for people living in Drass because they depend on snow-fed rivers.' Next summer the effects of the war will still be seen, says journalist Masood Hussain, because the last of the snow will melt and more explosives will flow downstream.

*Down to Earth* Vol 8 No 9

JORGEN SCHYTTE / STILL PICTURES

**INDIA**

## Measles menace

### Indigenous people risk wipe-out

SOPHIE GRIG / SURVIVAL

The isolated Jarawa people of India's Andaman Islands are in grave danger. Contact with the outside world – and common diseases like measles – is endangering the existence of the tribe.

As many as 20 per cent of the population are reported to have measles. It is believed that the Jarawa may have been suffering from the disease for some time before the cases first came to the administration's attention in late September. Many of the patients in the local Kadamtala health centre are already suffering from respiratory diseases which often come after a measles outbreak.

Of the four tribes of the Andamans (the Jarawa, the Sentinelese, the Great Andamanese and the Onge) only the Jarawa and the Sentinelese have survived the onslaught of settlement by outsiders so far. The Sentinelese live on their own island, North Sentinel, and are thought to number between 50 and 200. The Jarawa inhabit the west coasts of South and Middle Andamans, two large islands which have been the focus of Indian immigration to the area.

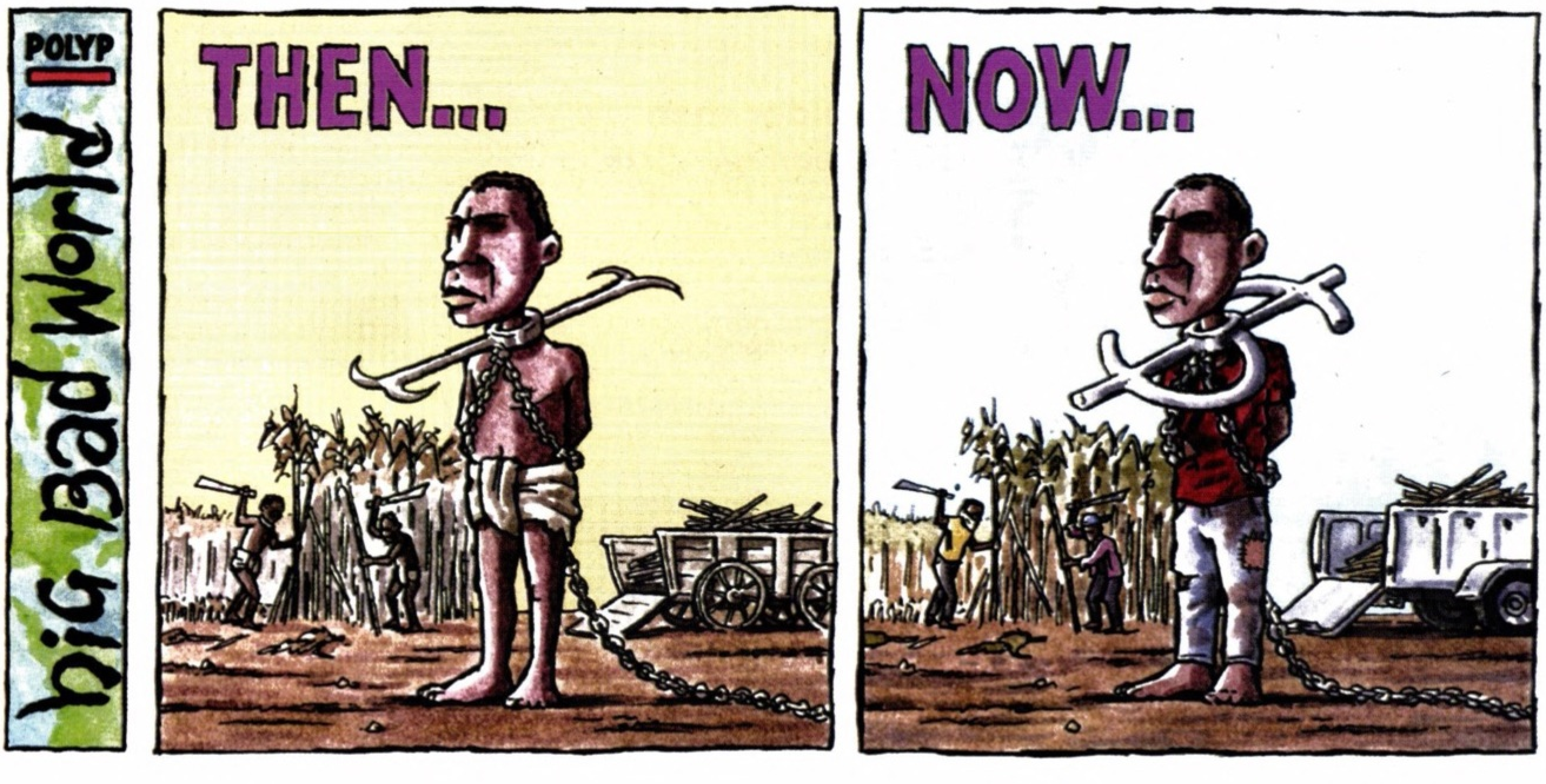
The fate of the other two tribes of the Andamans does not augur well for the future of the Jarawa. In 1877 a measles epidemic broke out amongst the 5,000 Great Andamanese who had been settled by the British colonial administration – 15 per cent of the population died from the disease. Officials at the time estimated that at least half of the Andamanese on one island, and all of the Andamanese on another island, died later as a result of its effects.

Only 28 Great Andamanese survive today. And a similar fate has befallen the Onge: now numbering only 101, they are reduced to working as bonded labourers on a plantation in return for food.

In 1957 the Indian Government set up a reserve for the Jarawa but since the 1970s it has reduced its size, appropriating land for logging, roads and settlement by Indians from the mainland and forcing the Jarawa into a smaller area.

Survival, an organization working for indigenous rights, is calling upon the Indian Government to give medical aid to the Jarawa, move all settlers out of the Jarawa's territory and close the road through their land to avoid further contagion.

**For more information, contact Survival: 11-15 Emerald Street, London WC1M 3QL, England.**
**Tel: +44 171 242 1441. Fax: +44 171 242 1771.**
**E-mail: survival@gn.apc.org Website: www.survival.org.uk**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# Update

CHINA

## Two for joy

### The natural way out of one-child policy

FRANK SPOONER

In a country where family planning is state policy and birth control is pursued vigorously, couples in Bazhou, a village in Hunan Province of South China, are the subject of envy.

While some couples, desperate for a second child, pay fines and others bribe doctors to issue papers 'allowing' a second birth, many Bazhou women sidestep the policy quite legally and naturally – they give birth to twins.

This so-called 'Village of Twins' lies more than 300 kilometres west of the provincial capital, Changsha. Medical data show that on average one pregnancy of twins occurs for every 67.6 gestations in China. In comparison, the incidence of twins at Bazhou more than doubles the average.

Twins can be a source of much fun and joy to those who have them, know them and teach them, villagers say. 'At school, for example, twins are always confusing their teachers,' says village head Shu Xiaoping.

But despite this veritable double dose of happiness, a twin can be a strain on the family budget. That does not come from fines – there is no penalty for giving birth to twins. But having to buy two sets of everything can mean becoming 'twice as poor' overnight in a village where the per-capita income is only 1,300 yuan ($158), against the provincial average of 2,065 yuan ($250).

Fortunately the vast majority of the Bazhou twins are healthy children. 'Only one twin sister didn't reach her first birthday,' says Shu Xiaoping.

Bazhou's multiple-birth phenomenon goes back three generations. One theory is that it is the result of two large, frequently twin-bearing families that live in close physical proximity and have intermarried. Out of the village's 18 pairs of twins, 10 bear the surname Shu while five are Xiao. Others believe Bazhou's secret lies in its pure, unspoilt environment – the crystal waters of the Wushu River which flow through the village, assisting the farming of fine melons and yams. All agree, however, that the factors are highly localized. A neighbouring village, Zhuangshang, for example, has not witnessed the birth of twins for some 20 years.

**Zhang Yifei, Tian Bizheng/Gemini News Service**

MARK EDWARDS / STILL PICTURES

**Côte d'Ivoire: a funeral ceremony for a female AIDS victim**

## AIDS: older men infect teenage girls

Young African women and girls are up to six times more likely to be infected with HIV than males of the same age, according to findings presented at the World AIDS Conference. In Central and East Africa the spread of AIDS is driven by older men infecting younger girls, who then pass the virus on to their children. An international study found that in Kisumu, Kenya and Ndola, Zambia around 30 per cent of women and 20 per cent of men were infected. In Cotonou, Benin and Yaoundé, Cameroon, just eight per cent of men and four per cent of women were HIV-positive.

But in Kisumu and Ndola there was a striking variation in rates of HIV by age and sex. Amongst 15-19-year-olds up to 23 per cent of women were infected compared with only 4 per cent of men. The biggest risk factor for teenage girls was having sex with men aged over 35 years – 40 per cent of whom carry HIV. Francis Ndowa of UN AIDS in Geneva says this illustrates the need to target safer-sex education at young girls and older men in these countries.

*New Scientist* Vol 163 No 2205

## Direct hactivism

CHRIS STOWERS / PANOS

**A tool for trouble – computer hacking becomes a popular form of activism**

José Ramos Horta's recent statement that if the outcome of the East Timorese referendum were not upheld hackers would wreak havoc in the Indonesian Government's computers as well as those of banks and airlines, once again raised concern about what is being called 'hactivism' – direct action through computer hacking. The US's FBI and Department of Defense reportedly receive 100 hacking attacks a day and have been forced to set up cyber-defence initiatives. Michael Vatis, assistant director of the FBI, says cyber crimes have doubled in each of the past two years with more than 800 cases pending. As part of direct activism against the economic system in London on 18 June 1999, an international group of hackers launched 10,000 cyber attacks on the City. Hardly any were reported to the police, says a spokesperson for Britain's National Criminal Intelligence Service, because companies are reluctant to publicize flaws in their security. Meanwhile, Horta is unapologetic for his threat: 'I've been categorically assured that not one life will be lost. I find it a far more moral way of fighting than using the NATO tactic of bombing a country back to the Stone Age.'

*New Scientist* Vol 163 No 2204

## Saved by a caterpillar

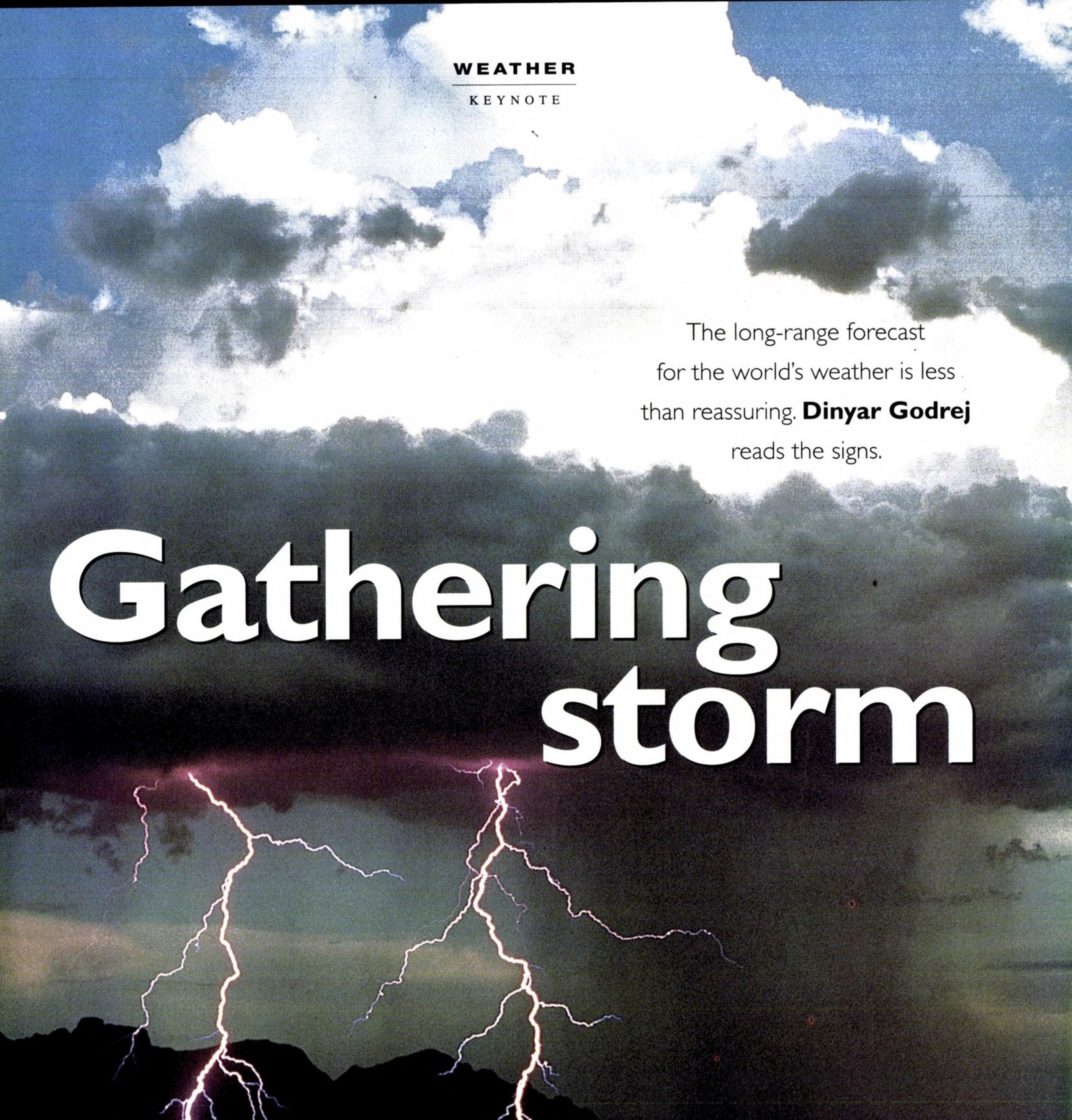
**People trapped in rubble and wrecked buildings after a bomb blast or an earthquake may have an unlikely hero – a robotic caterpillar. The robot is designed to crawl through gas, sewage and water pipes with lights, a videocamera and a microphone looking for signs of life. Eddie Grant, an electrical engineer at North Carolina State University says he thought of the idea after the bombing of Oklahoma City in April 1995. 'The rescuers would have given anything to have a robot that could go in and find people. I realized that pipes are a natural channel into the rubble.' Grant challenged six of his engineering students to build a prototype. 'They took a crazy idea of mine and turned it into a robust and interesting device,' he says.**

*New Scientist* Vol 164 No 2206

## Quote

**'All the heads of the airlines have to be in the air on 1 January 2000.'**

Chinese official Zhao Bo describes the Government's rule to ensure planes will not fall from the sky due to Year 2000 computer problems.



KEITH KENT / STILL PICTURES

The long-range forecast for the world's weather is less than reassuring. **Dinyar Godrej** reads the signs.

# Gathering storm

'OH this maddening heat,' exclaimed the woman as she came tearing across the street. In her sixties, at a guess, and wearing the merest wisp of a dress, she stopped in the shade of the booze shop's awning and began flapping her elbows in the breeze. For the next couple of minutes she launched into an unstoppable volley of exclamations, the gist of which, my barely adequate Dutch permitting, seemed to be that this sort of thing never used to happen before. While all around us beaming sun-seekers wafted by, happy in their tans, she nevertheless had my ear.

For in her complaint I could hear the echo of my elderly parents' rather more enervated voices. This summer the temperatures where they live in central India hovered for days in the forties. In the sapping dry heat, they both needed medical attention just to cope and could talk of little else whenever we spoke on the telephone. For them the record temperatures mean not just feeling run down, but also water shortages as reservoirs dry up before the monsoon rains arrive.

The weather as a topic of conversation has lost most of its neutrality for us – it's no longer 'safe', brought up in order to make inoffensive small talk. We talk about it because it is important, because it is not a little strange. This shift is not just restricted to family; increasingly friends and acquaintances bring up the subject in order to register their unease. It's constantly in the papers – every other day there are reports of hurricanes, droughts, floods or some other extreme weather and usually in the penultimate paragraph global warming is named as the probable culprit. Some television programme-makers have even hit upon a winning formula – strike a serious note by mentioning climate change in order to get away with the most bloodthirsty coverage of natural disasters.

*Nine of the hottest years since records began have occurred since 1988 and last year is being called the hottest of the millenium*

But behind the headlines is a world in perpetual motion. Each year the earth receives energy equivalent to a 1,000 trillion barrels of oil in the form of sunlight.[1] Much of it gets reflected right back into space by the shiny surfaces of water and ice. The rest functions as a kind of pump which drives ocean currents, evaporation, snow and rain. Trees absorb sunlight and release vapour, further fuelling the constant movement of life-giving water on our planet. Put very basically this is how the world's weather system works. A Brazilian physicist, Eneas Salati, estimates that the energy flow each day over the Amazon Basin alone is comparable to between five and six million atom bombs.[2] But despite these huge, almost unfathomable quantities, the world's weather is quite a precisely tuned entity – knock it and devastation can result.

### The stuff of havoc

Increasingly human activities are playing havoc with it. And ironically it is the stuff of all life on earth that is causing the damage. This stuff is the element carbon, the essential building block of anything that breathes or grows, whether animal, vegetable or in-between. The earth is packed with it in the form of their remains. But it also envelops the planet in the form of the gas carbon dioxide, invisible but with one remarkable quality that it shares with a few other gases – it traps some of the sun's heat, delaying its escape from our atmosphere. In this it performs the ultimate life-giving function, keeping the world's temperature within a small range that averages out at around 15° Celsius. All life thrives within this range, in sharp contrast to the rocky wastes of our nearest planetary neighbours.

The dance of carbon in the air is a remarkable one – we exhale it with every breath, it is liberated through volcanic explosions, fires and the decomposition of dead things. And, on the other hand, plants both on land and in the sea draw it back down in order to make their food and the oceans are constantly soaking it up. It's a system of endless recycling – or at least it should be.

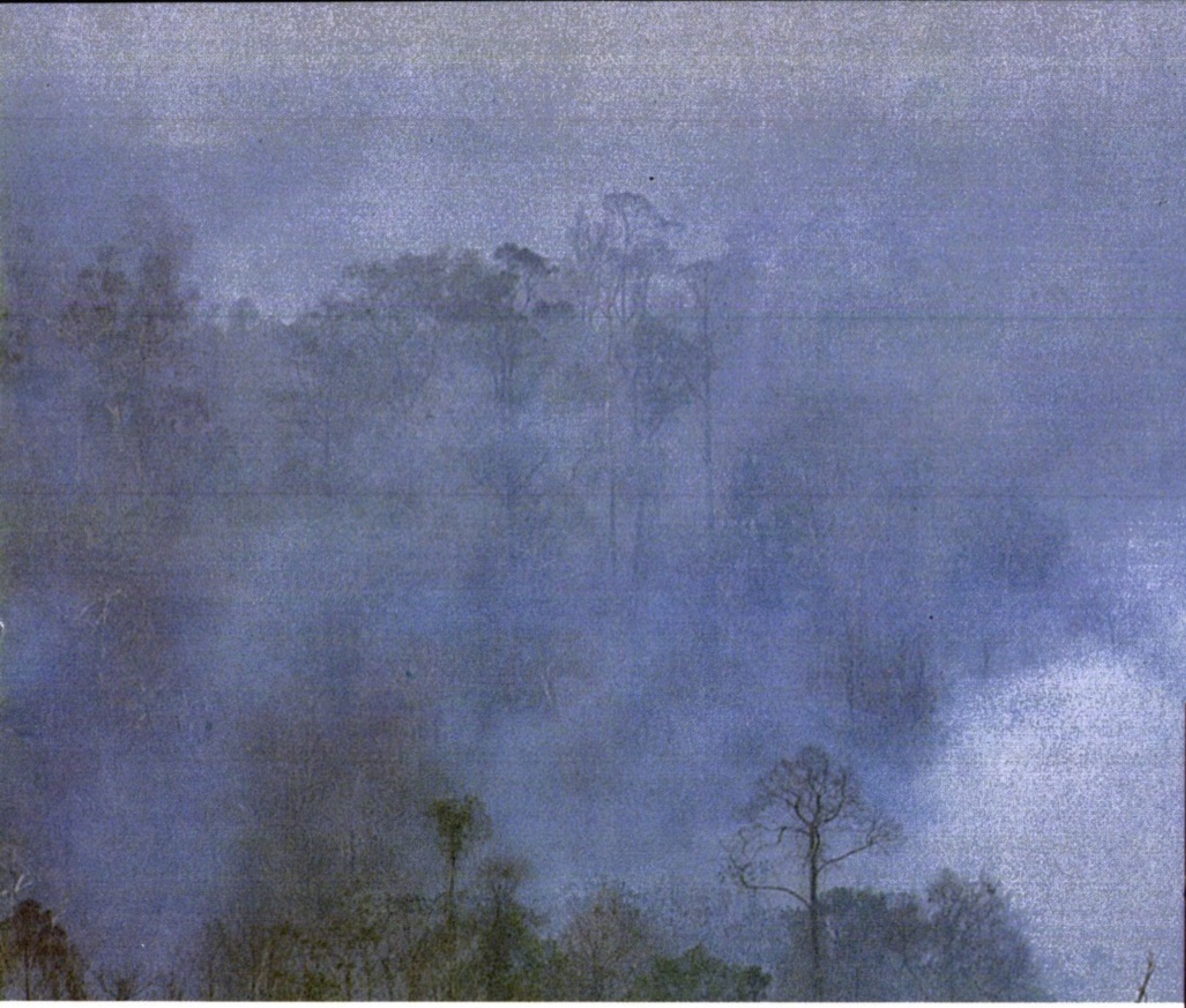
Sadly the engine of human progress, aided by that of greed, is throwing the system off-balance. By burning fossil fuels to provide us with electricity and to power our cars, we're adding over six billion tons of the gas to the atmosphere each year – a fraction of the amount already up there, but extra nonetheless, building up year on year. Its levels in the atmosphere are predicted to reach double pre-industrial levels by 2080. Alongside this the chopping down of forests continues unabated, diminishing the earth's ability to soak up carbon. Four-fifths of the earth's original forests have been felled or degraded and 40 per cent of the remainder are under threat.[3] This is really switching on the heat from both ends.

As carbon dioxide and the other aptly named greenhouse gases build up in the atmosphere ever more rapidly, the mercury is shooting up. Nine of the hottest years since records began have occurred since 1988 and last year went so far off the scale that it is being called the hottest year of the millennium. Globally this constitutes a rise of around 0.65° Celcius – which doesn't seem like much, until you look at it more closely. First it is faster than at any point in the last 10,000 years.[4] Second one has to remember that this is an average and that extraordinary highs and lows tend to get damped down by averages. And following on from that, the warming isn't happening evenly – the temperature near the poles has risen by up to five degrees at some recording stations. In some regions where the ground has been laid bare, soaking up heat, freakish highs are occurring. Take the sub-Saharan Sahel region where summer highs have doubled in some cases. It doesn't bear thinking about – your hottest summer day suddenly turning out to be twice as hot.

The world's weather today is more unpredictable than it ever was, showing its violent side far more often. This is just as climate scientists have predicted – storms will become both more intense and more frequent, coastal regions will be awash with rain and will flood more often whilst the great continental interiors will dry up, summers will be hotter and winters either

**Unseasonal rain after a two-year drought washes away topsoil in a matter of hours in Ethiopia's Sidamo province.**

HJALTE TIN / STILL PICTURES



Seeking sanctuary (below) as fires in East Kalimantan, Indonesia, April 1988, sent primeval forests up in smoke.

GREENPEACE / MORGAN

milder or paradoxically more severe. Dramatic flips could happen within a short span of time, not gradually, as supposed earlier. These are the headlines of today.

### All change

And everywhere life is struggling to adapt. Alpine plants are climbing up the mountainsides in order to find cooler temperatures, tropical fish are muscling in on Mediterranean waters threatening native species with extinction, people in the mountain regions of Rwanda and Kenya are developing malaria and yellow fever because mosquitoes have suddenly found the temperatures up there aren't quite as cool as they used to be. Women from Alaskan indigenous communities out picking greens to preserve for winter have discovered to their horror an entirely new pest clinging to the leaves – the humble, yet hungry, caterpillar. Seafaring birds from the same region are flopping dead from hunger as fish move further out in search of cooler waters, beyond the birds' range.

From Aotearoa/New Zealand to the highlands of Peru, glaciers are retreating at a ferocious rate causing the eventual drying up of the rivers they feed. North Korea is already in its fifth year of famine brought on by storms and floods, with the number of people dead crossing the two million mark. In Bangladesh there is a widespread acceptance that seasonal floods are worsening and people have built raised fields with freshwater ponds stocked with fish to help them sit floods out. But such preparedness begs a question: with Bangladesh's fertile coastal plains at risk of sinking under the sea by the end of the coming century, who and what will feed the dispossessed people? Already the number of environmental refugees worldwide has been estimated at 25 million, more than the total of all other refugees. Fleeing into adjoining lands they are largely invisible to the rich West.

Africa, the continent that has the greatest food problems already, is predicted to suffer the most from drought and creeping deserts. A country like Egypt would be sandwiched by disaster – with the sea and salinization eating up its coast and aridity spreading across the interior.

We have to pull our heads out of the sand now, before the changes start spiralling out of control. Here is a hypothetical but entirely probable doomsday scenario. As greenhouse gases build up in the atmosphere, temperatures rise. Forests begin to dry and die back or burn. Felling continues apace, diminishing their ability to draw down carbon dioxide. Areas under ice melt to expose the earth below, which begins to soak up the sun's heat instead of reflecting it. Long-frozen tundra vegetation begins to decompose releasing more carbon dioxide and methane. The seas, swollen by rising temperatures and melting polar ice, swallow densely populated coastal regions. With warming they also begin to lose their ability to absorb carbon dioxide and could start releasing the gas already dissolved in them – estimated at 50 times the amount contained in the atmosphere... You get the picture. As vicious circles go this one is hard to beat.

### Ostrich arena

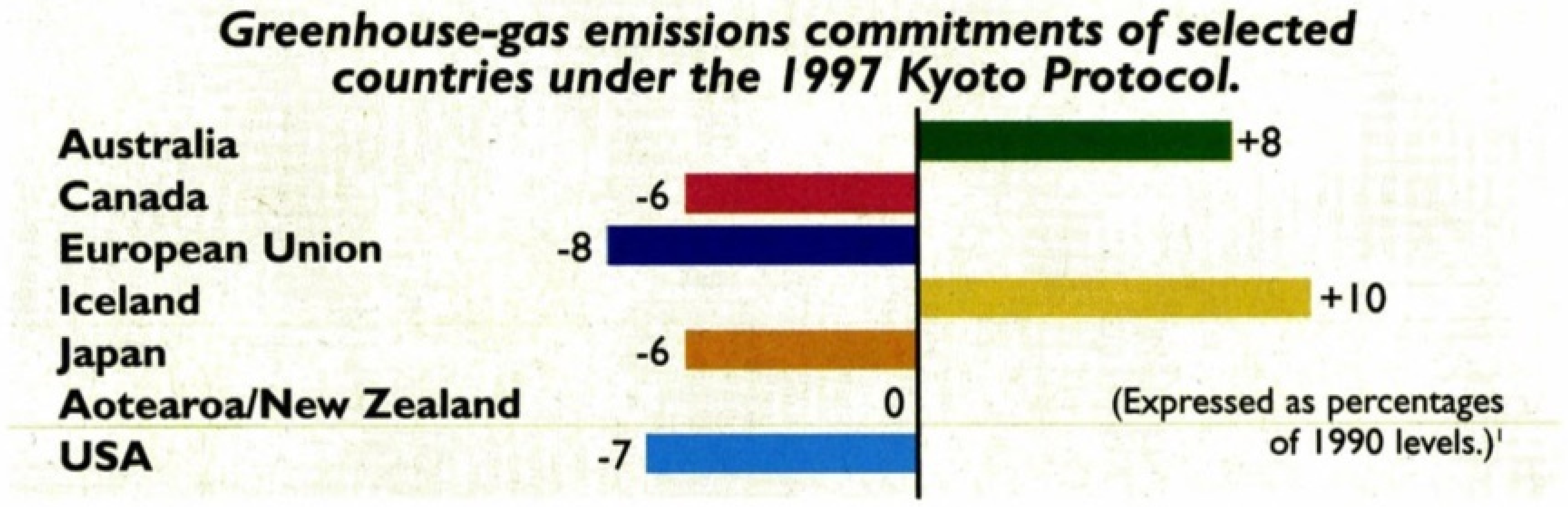
So where is the battle for the world's weather being fought? In the political arena, where an ostrich tendency seems to predominate. No matter how hard scientists and environmental activists and you and me shout, politicians will ultimately make the decisions that could halt this madness – or not.

The story goes back to 23 June 1988 when James Hansen, a climate scientist with NASA's Goddard Institute, warned a Washington meeting that the world was getting warmer due to the build up of greenhouse gases, and an increased tendency for droughts and floods was to be expected. Quite coincidentally he made his speech on the hottest day of the year in the US at a time when the Midwest was in one of its worst droughts. (It was also nearly a century after Swedish scientist Svante Arrhenius had first made the link between climate change and industry's emissions of carbon dioxide.) Hansen's speech was a spur to the setting up by the United Nations of the Intergovernmental Panel on Climate Change, a body of over 2,500 scientists from around the world. Seven years later this vast group reported back, confirming 'a discernible human effect on global climate'.

> ***'In the developed world only two people ride in a car and you want us to give up riding the bus!'***

During that time this global body of scientists had improved the models by which they made predictions about weather to come. To prove they weren't guessing in the dark, they ran the models backwards into the past and found their predictions matched to a T weather events that had already taken place. The message was clear:

***Greenhouse-gas emissions commitments of selected countries under the 1997 Kyoto Protocol.***



human emissions of greenhouse gases must slow dramatically and our reliance on fossil fuels must stop.

It wasn't a message the trillion-dollar-a-day oil and coal industries[4] were eager to hear and they launched their propaganda offensive – by aggressively promoting on every possible media platform a handful of discredited sceptical scientists whom they had funded, by instigating personal attacks on prominent IPCC scientists and by peddling disinformation. In the US the latter went from alarming stories about outrageous energy bills if the status quo were disturbed to funding the teaching of 'how petroleum improves the quality of life' to schoolchildren.[5]

When the world's governments met in Kyoto, Japan, towards the end of 1997 to discuss emissions reductions, the multi-million-dollar PR scare-mongering went into overdrive. Each nation came to the bargaining table with barely masked self-interest. The Alliance of Small Island States, whose member countries are at risk of sinking under rising seas, demanded the highest cuts in emissions – 20 per cent below 1990 levels. The Prime Minister of Tuvalu decried as 'utterly insensitive and irresponsible' the suggestion by some countries that it would be cheaper to relocate the population instead.[6]

The US, the world's largest emitter of greenhouse gases, and Canada insisted that Majority World countries should also pledge reductions. To which Zhong Shukong, the Chinese delegation leader, replied: 'In the developed world only two people ride in a car and you want us to give up riding the bus!' Entirely true, as Los Angeles alone has more cars than the whole of China. Australia, fearing the costs of regulating its energy-intensive mining industry, argued for and secured an increase rather than a reduction in its emissions. And of course the wealthy oil-producing countries in the Middle East set their faces firmly against any proposal that would threaten their livelihoods.

### Gordian knot

Out of this tangle of positions emerged, not surprisingly, a low target of 5.2 per cent below 1990 emissions (for individual country positions, see graphic above). Not quite the 60-to-70-per-cent reductions scientists had called for, which would mean in effect a phasing out of fossil fuels. Viewed optimistically this could be seen as a start, because no-one expects an overnight lop.

But let's just consider the country everyone is watching – the US. Having agreed to a seven-per-cent cut, the actual reduction after a spot of creative accountancy could be as low as three per cent, much of which could be further shaved by emissions trading. But even so, there has been not a squeak about ratification from the Clinton administration two years down the line, even though the President has gone on record saying that a 20-per-cent reduction could be achieved just by wasting less energy.[7] This is because the Republican-dominated Congress has been thoroughly wooed by the oil and coal lobby and takes up cudgels to defend the ordinary American's right to pollute as though it were sacred. Congress does this despite the fact that the Americans it claims to represent are increasingly making the connections between tornadoes, droughts, weird overnight epidemics, explosions in the insect and rodent populations and the weather. Hypocritically making a big show that developing nations should clean up their act, they actually seem to encourage the exact opposite (see *Smokescreen*, page 26).

## How to make a difference

1. The move away from fossil fuels needs to come at a national and international policy level. We can make our political representatives feel the heat and demand commitments to radically reducing emissions.
2. To get the message across we need to learn about the issues surrounding global warming and climate change as well as renewable sources of energy and inform others about them.
3. Our own energy consumption is the best starting point. Electricity can easily be saved by using energy-efficient appliances and switching off any that aren't needed.
4. Biking, walking or using public transport makes a real difference. So does cutting down on the number of journeys and ensuring that if we have to use a car it is fuel efficient.
5. Supporting public transport and campaigning for it to be made fast, frequent and cheap will help us all.
6. Governments need to support renewable initiatives so that we can have real choice as energy consumers.

[*Based on Greenpeace guidelines*]

Oddly enough the most radical voices in this you-first game are not just those of environmental activists, but of the IPCC scientists. They argue that poverty reduction needs to become a priority for rich nations, as poor people are often pushed into degrading their environment to meet their needs, magnifying the impacts of extreme weather. The West, they say, must provide technical know-how and financial support to Majority World nations so they can switch to cleaner forms of energy without sacrificing their developmental goals. In truth despite these countries' political position that due to their tiny historic contribution of greenhouse gases (less than ten per cent) the West cannot lecture them, many would welcome being less dependent on oil and coal.

Already a southern Indian wind farm with 2,000 turbines is the second largest in the world. In Kenya more rural households get their electricity from solar energy than from the national grid. Vietnamese farmers are making biogas, which burns relatively cleanly, from farmyard waste. Such projects are starting up around the world, empowering people by letting them take control.

But nothing short of an energy revolution is needed. The technology already exists to meet all the world's energy needs cleanly, it's just crying out for funding. Pushing current subsidies for fossil fuels worth $300 billion towards renewables is the kind of action required. Jobs lost in the oil and coal industries would be more than compensated for by the new jobs created.

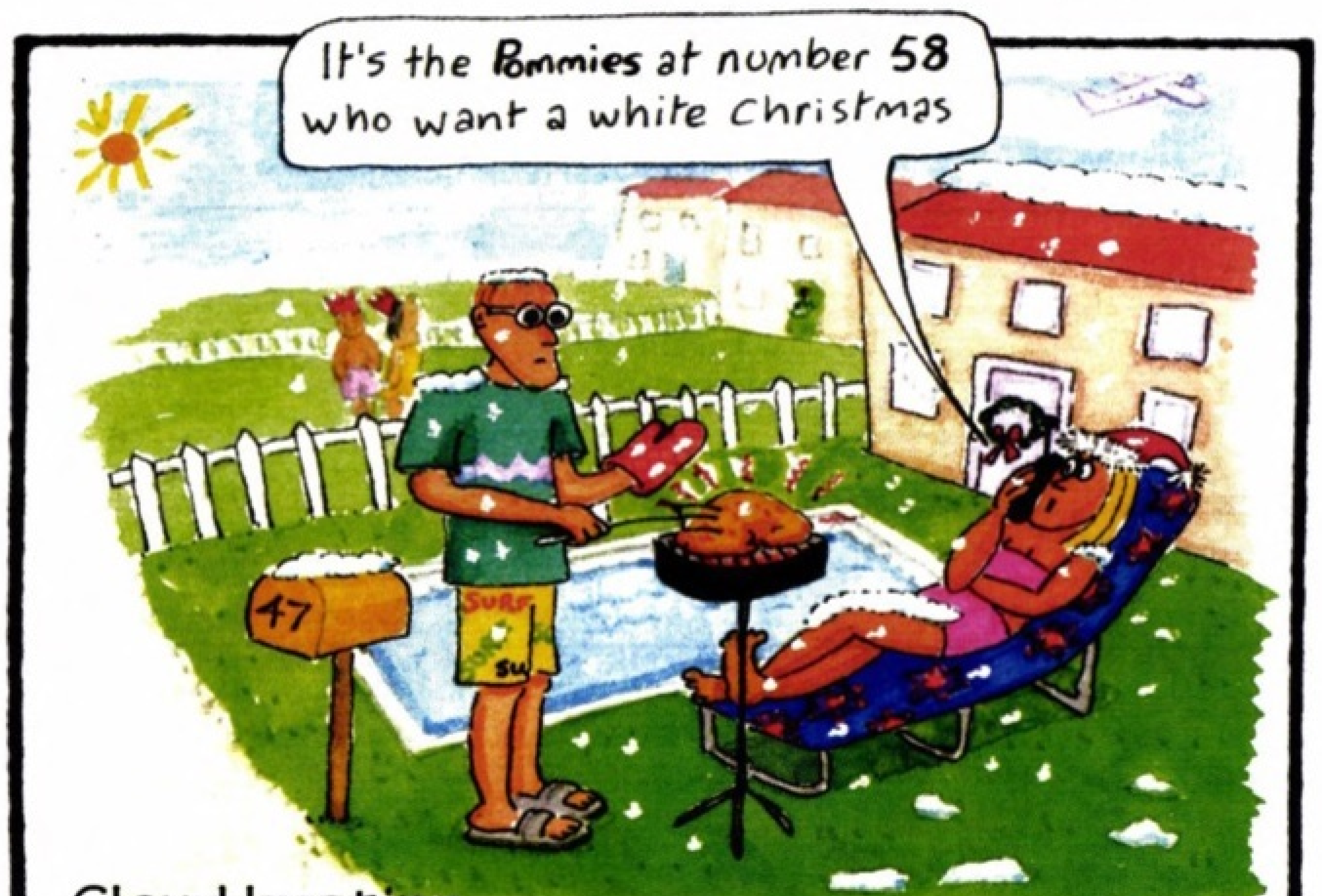
Already renewable energy is one of the fastest growing sectors in the world. Two oil giants – British Petroleum and Shell – have trumpeted their comparatively small investments in solar energy. They are no doubt just testing the waters, seeing as they and the rest of the world's fossil-fuel companies have already located reserves four times the amount that can be safely burnt.[8] But perhaps it is also a sign of wanting to get in early on a good thing.

What is urgently needed is for more business and world leaders to think in the same way, regardless how dodgy their motives. For as the Argentine climate negotiator Raul Estrada Oyuela put it: 'We are all adrift in the same boat. And there is no way that only half the boat is going to sink.'[4] ■

**1** *Climate Change: Awareness and Action* by Dave Mussell, Juleta Severson-Baker and Tracey Diggins (Pembina Institute for Appropriate Development, 1999). **2** Quoted in 'Eradicating Amazon rainforests will wreak havoc on climate' by Peter Bunyard, *The Ecologist*, Volume 29 No 2, March/April 1999. **3** *The Independent* 16 September 1999. **4** *The Heat Is On: The Climate Crisis, The Cover-up, The Prescription* by Ross Gelbspan (Perseus Books, 1998). **5** Report for the **NI** by Christian Huot, 1999. **6** Shuzo Nishioka, 'Fairness and Local Environmental Concerns in Climate Policy' in *Fair Weather: Equity Concerns in Climate Change* edited by Ferenc L Tóth (Earthscan, 1999). **7** United Nations Association of the USA website http://www.unausa.org/programs/gcc.htm **8** Greenpeace carbon budget calculations, May 1999.

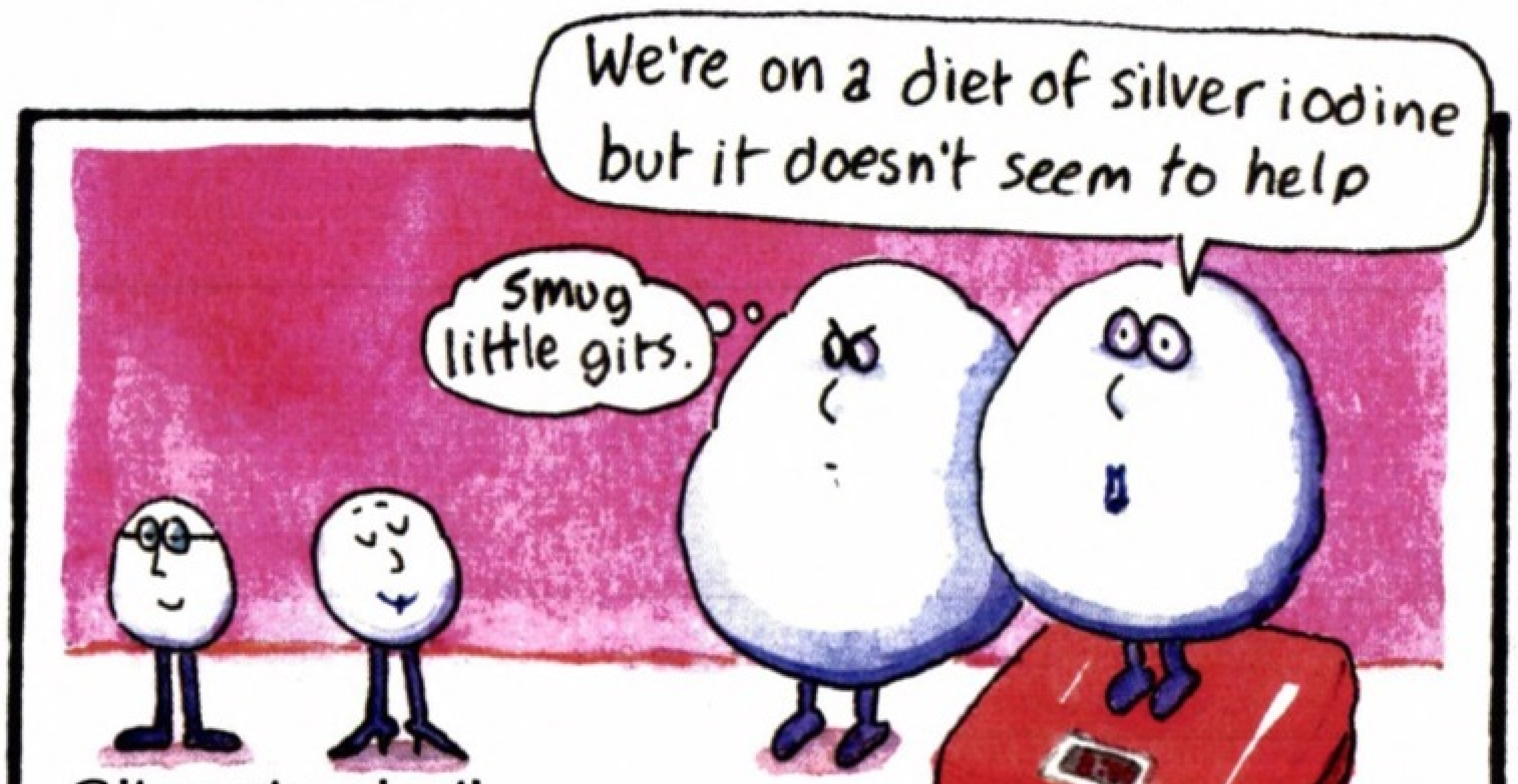
# Hail and high water

*A sidelong glance at human attempts at control. Cartoons by **Viv Quillin**.*


It's the Pommies at number 58 who want a white Christmas
47
SURF

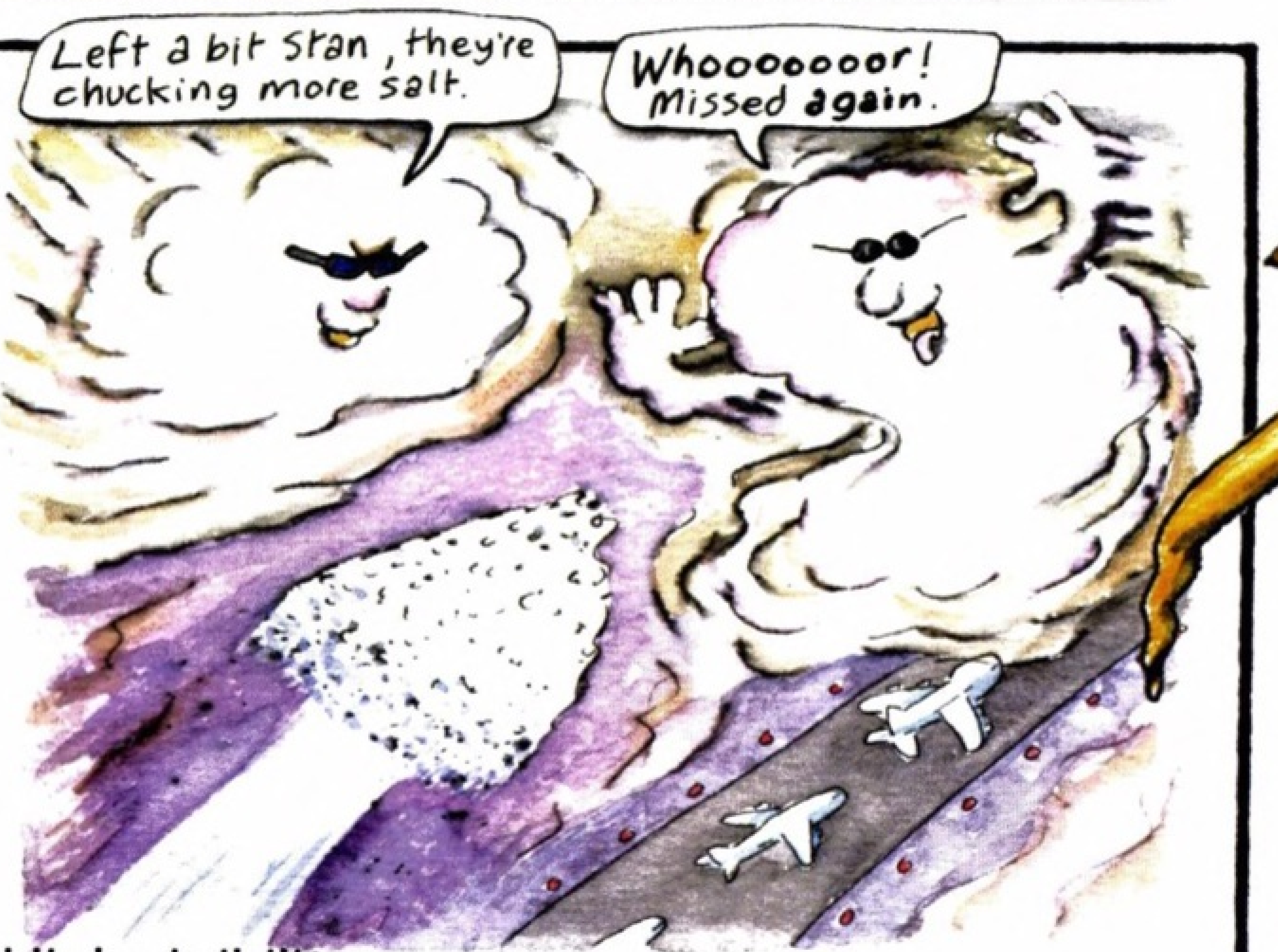
### Cloud busting

Want the clouds to part? Pumping them with dry ice crystals, silver iodide or potassium chloride should in theory condense vapour around them, making rain or snow drop out of the sky. This 'cloud seeding' has gone increasingly high-tech since its beginnings in 1946, but success so far has been limited – and in a number of cases people on the ground have complained of less rather than more rainfall.


We're on a diet of silver iodine but it doesn't seem to help
Smug little gits.

### Slimming hail

If big hailstones are your problem, try firing silver iodide into the heart of hail clouds using rockets and artillery shells. The idea is to increase the number of hailstones, so there's less likelihood of them growing into whoppers. The jury's still out on whether it works.


Left a bit Stan, they're chucking more salt.
Whoooooooor! Missed again.

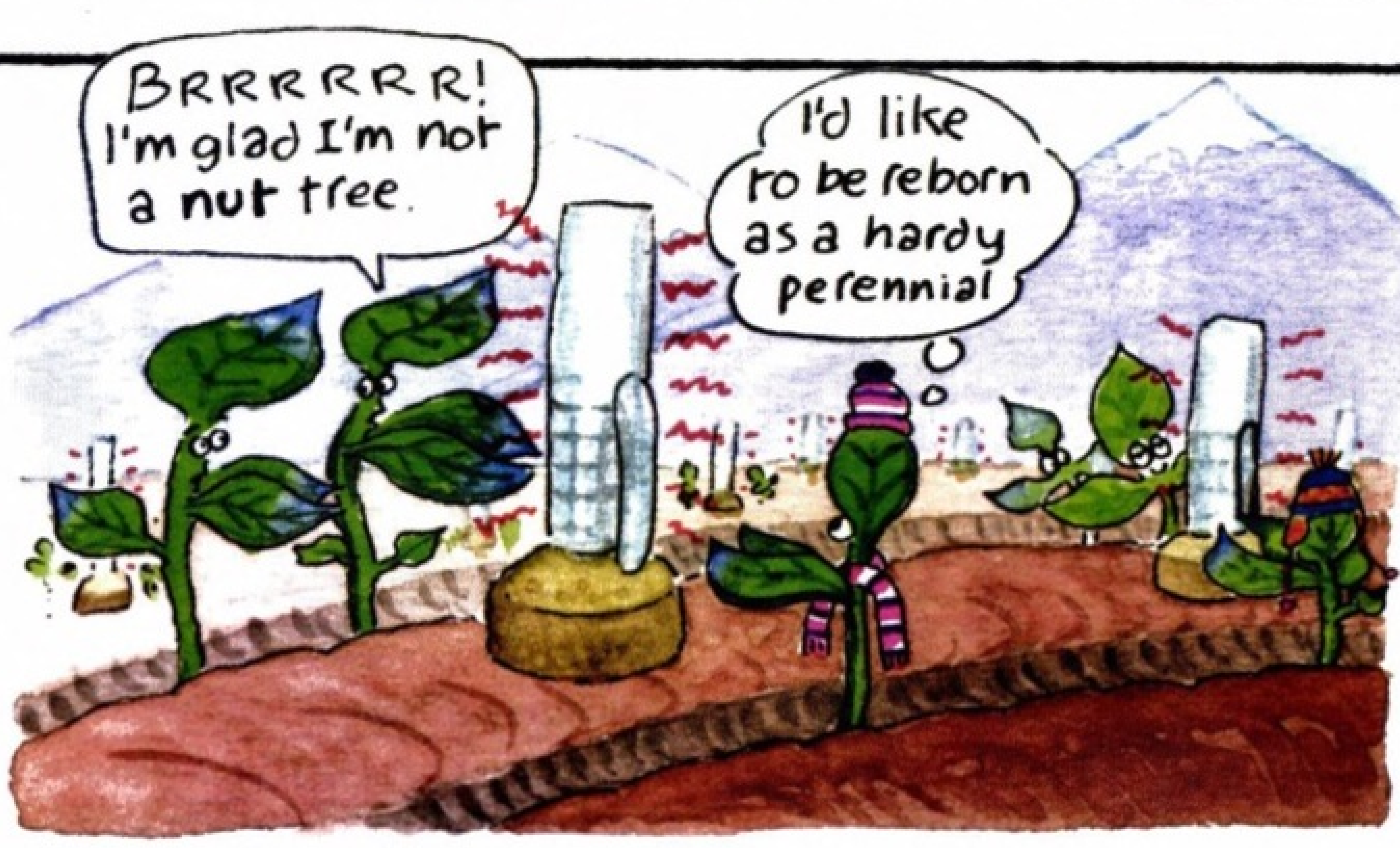
### High visibility

Airports have numerous tricks for banishing fog and clouds. Freezing fog and stratus clouds can be dissipated by seeding. Warm fogs are trickier customers – heating schemes to evaporate them are expensive and chucking drying agents at them, like salt, is a bit hit or miss.

The electricity's been cut off! Are these humans having another winter of discontent?

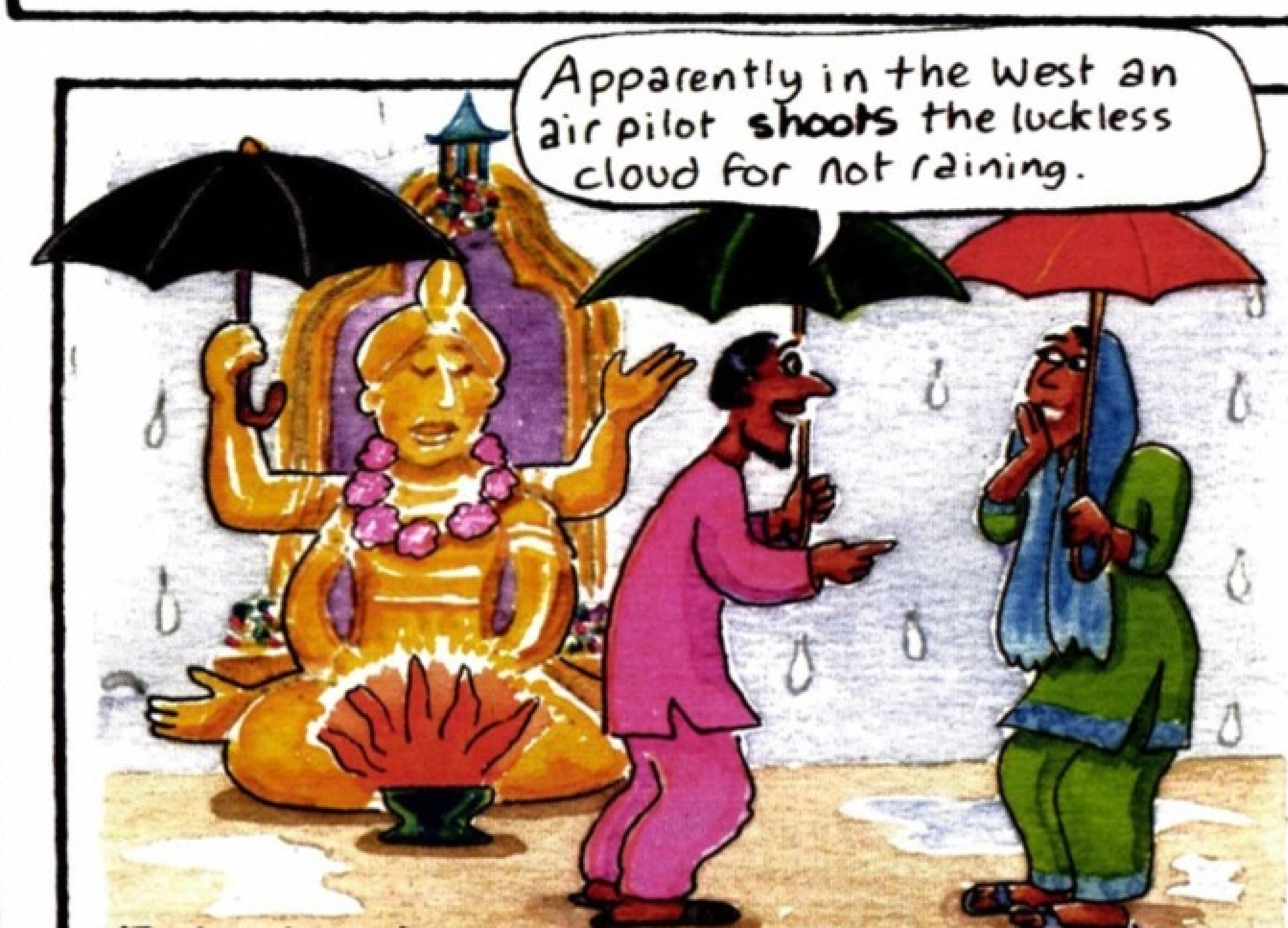
### Lightning magnets

Not even lightning has escaped attempts at management. Thunderstorms have been seeded with metallic chaff to produce a current that should have neutralized their electrical fields. The results? Inconclusive.


BRRRRRR! I'm glad I'm not a nut tree.
I'd like to be reborn as a hardy perennial

### Gardening climes

Efforts at controlling frost-damage have occupied the green-thumbed brigade. Some of the more ingenious measures have included employing large fans to mix cold ground air with the warmer air a few metres up, spraying water which by freezing would release latent heat into the air, and using smoking smudge pots that slowly burn fuel over a period of time.


Apparently in the West an air pilot shoots the luckless cloud for not raining.

### Rain rituals

Rain shrines in Zambia, the shamanic 'rain dances' of indigenous peoples in North America and Brazil, fire offerings to the rain gods in India – farming people around the world have a number of rituals that affirm their strong dependence on life-giving rain. Often stereotyped by the West, the rituals have probably as good a chance of succeeding as the airborne efforts of scientists.

# Catastrophe!

The case for the links between global warming and extreme weather grows ever stronger. Events like this year's unprecedented floods in China, to cite just one example, show how extreme weather impacts on the world economy and how climate change can even trigger epidemics. Indeed, late this summer helicopters were busy spraying New York to counter an outbreak of St Louis Encephalitis triggered by global warming. Climate change won't just make sea levels rise in a few unfortunate locations or make life miserable for El Niño victims. It has the capacity to change the economic, political and demographic shape of the world.

According to historian **David Keys**, the last time global climate change transformed our planet was back in the sixth century AD, the heart of the Dark Ages. Today climate change is at least partially driven by human agency. But 1,500 years ago it was triggered by a massive volcanic eruption (535 AD) in Southeast Asia (Krakatoa being the likeliest culprit), setting in motion a chain of events which included plague, barbarian migrations and revolution.

## PLAGUE

'With some people it began in the head, made the eyes bloody and the face swollen, descended to the throat and then removed them from Mankind. With others, there was a flowing of the bowels. Some came out in buboes [pus-filled swellings] which gave rise to great fevers, and they would die two or three days later with their minds in the same state as those who had suffered nothing and with their bodies still robust. Others lost their senses before dying. Malignant pustules erupted and did away with them. Sometimes people were afflicted once or twice and then recovered, only to fall victim a third time and then succumb.'

Thus wrote the sixth-century church historian Evagrius, describing the gruesome symptoms of the bubonic plague which devastated the Roman Empire and much of the wider world in the sixth and seventh centuries, the so-called Dark Ages.

By decimating populations and wrecking economies, the plague transformed the history of the eastern Mediterranean, Western Europe, the Middle East and Africa. In a sense, it was the final nail in the coffin of the Classical World and helped give birth to a string of modern European nations – England, Ireland, France and Spain. But the plague wasn't simply a disaster which erupted out of nowhere. Research which I've carried out over the past four years shows that it was almost certainly triggered by the climatic chaos of the mid-sixth century AD.

It seems that the disease had long been endemic among wild rodent populations in East Africa – but it was the climatic disaster following 535 AD which enabled the disease to spread outside its normal territory.

The climatic situation (probably cooler, drier weather followed by floods) helped the plague bacillus in three key ways. Cooler weather increased the population of the fleas which carried the bacillus in their gut. It also forced the fleas to bite more rodents and other mammals because cooler temperatures prevented the bacillus releasing a natural anti-coagulant in the flea's gut, a failure which resulted in the flea becoming ravenously hungry as its gut was blocked by blood clots. Third the climatic chaos destabilized the relationship between predators and their rodent prey – a destabilization which led to a breeding explosion by the flea's rodent hosts.

Once the disease had broken out of its normal territory, it appears to have spread throughout much of Africa – and northwards into the Mediterranean world. Its journey to Europe and the Middle East was by way of the Red Sea and the Roman equivalent of the Suez Canal – and was almost certainly transmitted courtesy of Roman greed for African elephant ivory. It was probably the ivory-trade vessels which introduced bubonic plague into the Mediterranean world.

I believe that in Africa it killed off the continent's major ancient ports. Indeed to this day their precise locations are a complete mystery to archaeologists. The plague also fundamentally changed the nature of the culture and the economy across vast swathes of eastern and southern Africa. Agriculture declined in many areas and pastoralism took over – almost certainly because plague-carrying rodents were more attracted to agricultural settlements and their stores of grain than they were to milk and meat on the hoof.

## THE AVARS

'They are treacherous, foul, untrustworthy and possessed by an insatiable desire for riches.' These 'scoundrels' are 'very experienced in military matters' and 'prefer to prevail over their enemies not so much by force as by deceit, surprise attacks and the cutting of supply lines.'

The Roman Emperor Maurice was writing, in the late sixth century, about the hordes of Mongolian Avars who had migrated across Asia and had begun to cause major problems for his Empire.

Originating in far-off Mongolia, the Avars had been forced to migrate westwards by the self-same climatic catastrophe which

ILLUSTRATION BY ANNE CAKEBREAD

had scattered plague across the continents.

Tree-ring analysis and historical evidence from Siberia to the north of Mongolia, and from China to the south, suggest that the region was hit particularly badly by drought. And, as in so many other parts of the world, it was the fact that the disaster affected different peoples with different economies in quite different ways that led to political change.

In Mongolia, the event seems to have humbled the Avars and, in net terms, benefited their vassals, the Turks. Indeed, it enabled the Turks to overthrow their Avar masters and to launch their own empire. The Avar fall from grace was bad news for the Romans – but, in the long term, definitely good news for the Turks and, indirectly, good news also for the Arabs and for Islam, who were to benefit from Roman weakness.

Yet the spectacular geopolitical change which the 535 catastrophe wrought in Mongolia happened not simply because the weather was bad – but because the Avar and Turk economies reacted differently to the event.

Mundanely, in Mongolia it was the difference in the designs of cows' and horses' stomachs which was probably responsible. The Avar economy – and military strength – was utterly dependent on the horse, whereas the Turks had a more mixed economy, including cattle. To the Avars, the horse was everything – a source of meat, milk, cheese, yoghurt and even alcohol (the sweet fermented mares' milk called *koumis*). But horses often find it much more difficult to survive drought than cattle. Horses fail to digest – and therefore excrete – up to 75 per cent of the protein they eat. By contrast, cattle excrete as little as 25 per cent. Thus, when all there was to eat was dried-out, low-protein grass, cattle had a marked advantage over horses.

As hard winters and drought continued into the second and third years of the catastrophe, families would have begun to starve to death. Unable to find food, unable to barter food from others (horses had been their wealth), unable to raid effectively, unable to defend themselves adequately without healthy horses, the Avars must have known that time had run out. Fleeing the Turkic uprising, thousands of Avars fled into exile and began their 3,000-mile trek towards Europe.

## MEXICO

The climatic chaos of the mid-sixth century also re-synchronized history in Southeast Asia, China, Japan, Koreà and South America – but nowhere more dramatically than in Mexico.

There, I believe, the catastrophe was responsible for killing off the greatest ancient civilization of the Americas – the spectacular pyramid-building empire of Teotihuacan, the 'Place of the Gods' in the Mexican language Nahuatl. Recent redating of the collapse of the Teotihuacano civilization shows that it followed directly on the heels of the climatic disaster.

Archaeological and skeletal evidence strongly suggests that in its final phases the population suffered from malnutrition and disease – and that the Empire's government and its religion were finally overthrown in a bloody revolution.

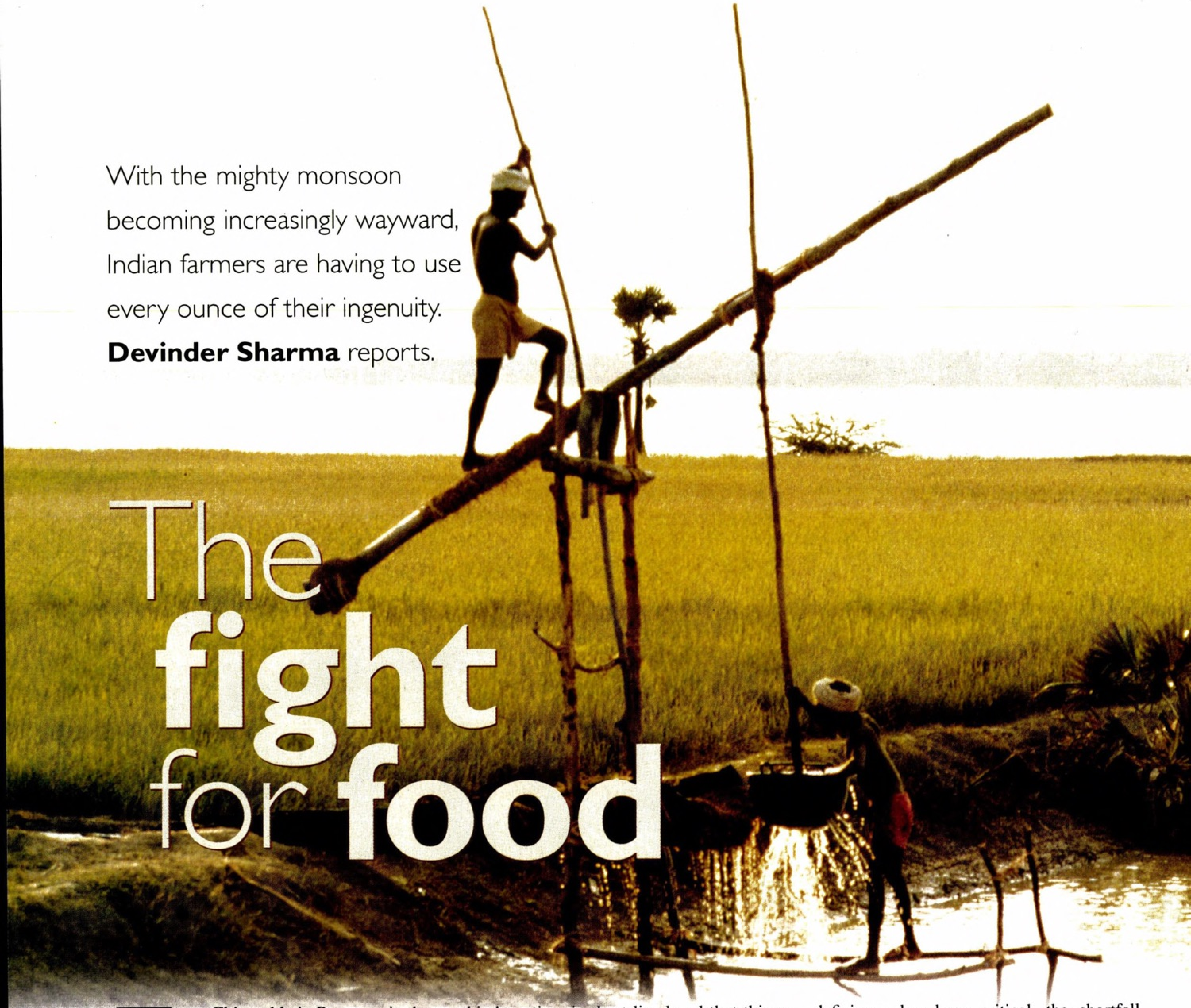
Infectious disease was common in Teotihuacan at all times. However, when the agricultural system failed, nutritional deficiency seems to have massively reduced the population's ability to counteract infection. Infection would then have manifested itself in several major ways, often including severe diarrhoea and a tremendous lowering of the digestive system's ability to absorb nutrients. Nutrient starvation, rather than the total non-availability of food, would then have resulted in death.

High death rates in the city – creating demand for migrants – coupled with economic collapse due to agricultural failure in the countryside, would have led to substantial migration into the metropolis. But research suggests that most of these migrants, with lower immunity to urban disease, died within a few years of their arrival. In the final period of Teotihuacan, deaths in the prime migrant age group (15 to 24) trebled from 8.3 per cent to 27 per cent of total deaths.

The end almost certainly came in the form of an extraordinarily violent popular insurrection. Nearly every major building in the city associated with the ruling élite was ransacked, torn apart and put to the torch. Archaeological excavations have yielded evidence that palaces and temples were burnt to the ground in an orgy of systematic hate-filled destruction. Religious buildings and the city-centre palaces were the main targets, probably because all the major deities were associated with the rains that had failed. Relatively few apartment compounds were attacked, and those that were probably belonged to extended families that were somehow associated with the Government or with the failed religious system.

All the evidence shows how ancient America's most extraordinary civilization was finally humbled by the horrors of climate change. As in Africa, the Mediterranean world, Central Asia and many parts of the globe, the sixth-century climatic catastrophe quite literally re-synchronized history. ■

**David Keys,** archaeology correspondent with the London-based *Independent* newspaper, has explored well over a thousand archaeological sites in over sixty countries. He has recently published a groundbreaking study of past global climate change and its political consequences – *Catastrophe: An Investigation into the Origins of the Modern World* (Century, ISBN 0 7126 8069 1) – which covers in greater detail the events mentioned in this article and much else besides.



# The fight for food

With the mighty monsoon becoming increasingly wayward, Indian farmers are having to use every ounce of their ingenuity. **Devinder Sharma** reports.

For Chimanbhai Parmar, it has turned out to be an endless wait. More than two months after completing the sowing of the groundnut crop, and hoping for a second bumper harvest in a row, parched and barren fields stare at him. For kilometres in every direction, the absence of the monsoon rains has left behind a picture of devastation and misery.

The outlook this year for Parmar, who has three children to support, is less than promising. With his fields failing to yield anything, he has to look for work elsewhere. Used as he and his fellow farmers are to hardship, the options are, nonetheless, desperate. They could end up as daily-wage labourers for the Public Works Department, which ironically enough is responsible for repairing roads damaged by the monsoon's fury, among other things. A day's toil for the Department would fetch around 30 to 40 rupees (less than a dollar). Or else they could try seeking piecemeal work in local shops and industrial units to tide them over. Each farmer is praying that this lean time is short-lived and that things won't get so unbearable that they have to start selling off their cattle.

Chimanbhai Parmar and the other small farmers of Chandroda village in the coastal Saurashtra region of India's Gujarat state are victims of an aberrant weather phenomenon that seems to be becoming more and more established with each passing year. Like thousands of small farmers in the region, Parmar has learned to live with the 'curse' of the rain gods. For more than a decade now the monsoon rains – once regular arrivals in June – have followed their normal trend only every alternate year. This year, hoping against hope, farmers had welcomed the first showers and immediately undertook the sowing of groundnuts, their only cash crop. Within a month of sowing, the plants had paled and withered in the scorching sun – fodder for the cattle to graze on.

## Creeping drought

Parmar's village belongs to one of the 11 districts in Gujarat where the rainfall deficiency has been critical, the shortfall exceeding 50 per cent of normal expectations. The long and dry spell has taken a severe toll on crops in Gujarat, the country's biggest groundnut producer, which accounts for about 35 per cent of the total harvest. In the neighbouring state of Madhya Pradesh the lateness of the rains meant that farmers were left with no choice but to forgo the sowing of soya beans and groundnuts. They could not even resort to their usual standby in such situations of sowing coarse millets in the first week of August. When the rains finally did arrive, more than a month after they were due, in late August and early September, farmers were quick to cultivate low-yielding pulses in a desperate effort to make the best use of the available moisture.

In parts of Rajasthan it was a similar story. Situated in one of the most inhospitable arid zones in the world, Rajasthan's northwest corner extends into the vast Thar desert. With a wide range of temperature and an unpredictable monsoon climate, drought and desertification are

Life's fluid: farmers draw water for irrigation in time-honoured fashion

RAISSA PAGE / FORMAT

common, and water is scarce. Devoid of assured irrigation, the normal time for sowing coarse millets like *bajra* coincides with the onset of monsoon rains in July. If the rains fail to arrive even a week after the right time for sowing *bajra* is over, farmers opt for coarse grains like sorghum and *moth*. And if the rains are later still, the only alternative is to go in for pulses like *moong* and *arhar*.

Despite the Indian Meteorological Department predicting a normal monsoon this year, the rains remained elusive over the western parts of Rajasthan for most of August, forcing farmers to put more areas under pulses. Similarly, two districts in neighbouring Haryana, three districts in Madhya Pradesh, and fourteen districts of Tamil Nadu in southern India received less than 50 per cent of their expected rainfall. Only 64 per cent of the country's cultivable land received normal rains. Farmers had little choice but to increase the area under pulses at the cost of oilseeds and coarse millets. Over large parts of the northeastern states and Bihar the monsoons were earlier than usual, leading to an increase in the area under rice.

Over the years farmers in the rainfed regions of the country – comprising nearly 70 per cent of the land under the plough – have learned to live with the vagaries of the monsoon. With small landholdings, often not exceeding one hectare, and farming entirely at the mercy of the rain gods, the farmers in the drylands of India are a beleaguered lot. Without any official support in the form of direct subsidies, it is, however, their courage in the face of adversity and endurance at the time of calamities that has enabled them to survive the odds stacked up against them. They rely on an abundant store of existing traditional knowledge to free themselves from the clutches of errant weather.

Among all the factors that influence agriculture the climate is by far the most important. Rapid deforestation, melting of the glaciers, reduced river flows and worsening industrial pollution are all factors in influencing change. In the past eight years the two frontline agricultural states of Punjab and Haryana, forming the food bowl of the country, have been receiving excess rainfall; while Orissa, Madhya Pradesh and Kerala have been receiving less and less of their average share. Last year extremely high summer temperatures, followed by a prolonged dry spell during the monsoon season, brought on severe drought conditions in Orissa. But, soon after, Orissa witnessed flash floods, indicating that such abrupt weather changes were on the rise.

## Regeneration now!

Knowing that the efficient management of water is the key to viable agriculture, farmers in many parts of the country have developed and strengthened their traditional water-harvesting practices. In the Saurashtra region of Gujarat, for instance, villagers have been able to recharge more than 100,000 drying wells. They set to work diverting into specially dug filter tanks rain water that would otherwise have run off. Once filtered, the water was guided into wells. In the absence of any government-supported programme to augment water supplies, villagers were encouraged by grass-roots workers to rely on their own ability and knowledge. Learning from their fellow villagers, the movement to recharge drying wells is spreading on a large scale in areas adjoining Gujarat.

In the Alwar district of Rajasthan, villagers motivated by the non-governmental organization Tarun Bharat Sangh, began conserving traditional water-harvesting structures like tanks and ponds. More than 3,500 defunct village ponds have become operative in the past three years. And in the process villagers in the district have been able to perform an incredible feat – regenerating five dried-out rivers. As a result, villagers now even cultivate vegetables and sugarcane, both water-intensive crops.

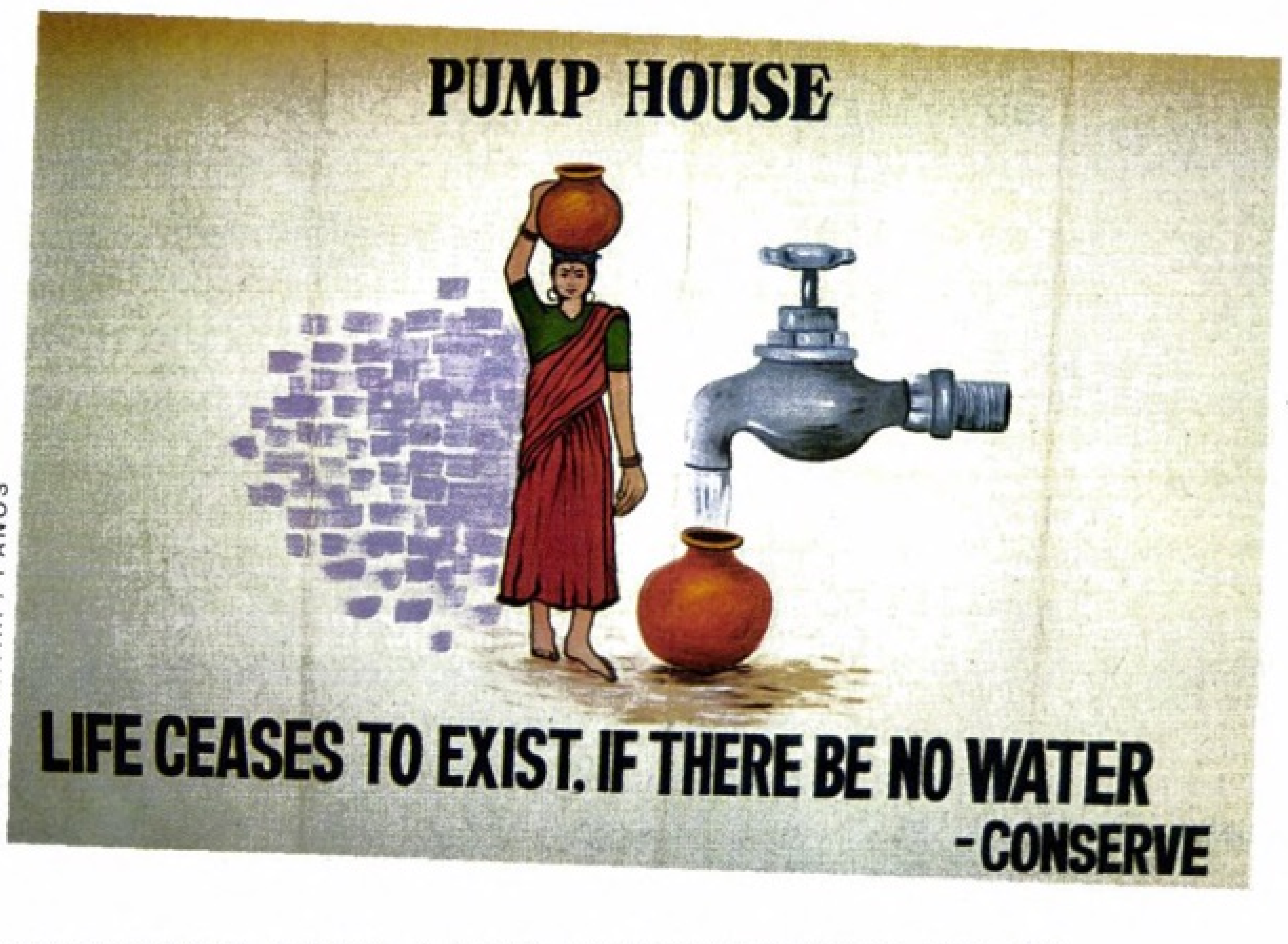
## Mounting a defence

Preparing a strong defence against the frequent prolonged dry spells is certainly an effective strategy to adapt to the changing climatic pattern. Already, farmers in the northeast regions of India have been quick to tailor their cropping patterns to the changes in the monsoons. For the past few years, a shift in the monsoon cycle has been observed. The southwest monsoon has been arriving early by about a fortnight, necessitating an early transplanting of rice. This year, more than 3.1 million hectares of land under rice was planted early in eastern India to coincide with the monsoon rains. One benefit of this early planting is that the crop may escape some of the usual pests and diseases. A good rice harvest is expected.

In the years to come, the greatest challenge to Indian farmers could come from a rise in temperatures, which would dry out soils and increase the rate by which plants lose moisture. While some experts believe that higher temperatures would help farmers by destroying some weeds and disease pathogens, others think that a mere 1.5 degrees Fahrenheit (about 0.65° Celsius) increase in temperature could reduce India's wheat crop by ten per cent.

The spread of desert, a shorter growing period for foodgrains in the north, changes in the cropping pattern, reduced water supplies from the major river systems following the drying up of glaciers: all of these will all have a multiplier impact on the country's food security. The odds against Indian farmers, despite all their ingenuity, could ultimately prove to be too high. ■

**Devinder Sharma** is a food and trade policy analyst. Two of his recent books are *GATT to WTO: Seeds of Despair* and *In the Famine Trap*.



PIERS BENATAR / PANOS

# Seasons of the mind, storms of the soul

Not feeling quite up to scratch? It could be a weather bulletin from the pineal, says psychiatrist **Trevor Turner**.

It happens all the time. Some sparkle-toothed TV weather person, with distinctive hand movements and upbeat patter, tells you that tomorrow it will be 'good weather'. With manic glee s/he announces that the temperature will reach, say, 29°C, great for getting 'out and about', and hints that you should go out and enjoy yourself. The fact that you can't, because you are stuck behind a desk or in an operating theatre, or wherever, never seems to cross the weather person's mind. And this sense of frustration at not being able to 'enjoy the weather' makes the irritability worse, the heat rash itchier, and concentration more difficult. Throw in air-conditioning, a closed-in 'sick building', and the discomforts of formal clothes – and urbanites can be seen as meteorologically mad. It might even be true to say that the weather, in ways much more profound than the minor personal problems that pass for experience in the modern world, affects our very soul.

By 'soul' I refer of course to the pineal gland. This sits in the more primitive part of the brain, produces a hormone called melatonin (among various other neuro-chemicals), and seems to react to light. Despite thousands of research hours grinding up pineal extracts and looking for data, this gland remains very poorly understood. It seems to be the mechanism that causes birds to fly south in winter, and may affect moods in humans as well as patterns of sleep and appetite. Tumours of the pineal are associated with sexual precocity, and it seems to gather calcium and harden as you get older. Yet if there's any biology at all behind 'feeling the force' Star Wars-style, it's likely to lie in the pineal gland.

## To everything a season

The fact of the matter is that climate and weather can't be ignored when looking at people's mental states. The most obvious impact is revealed in the spring and autumn relapse rates for people with manic depressive illnesses. That is when, in temperate latitudes at least, the amount of light available is changing. Switching from 'the clanging arch of steel grey March to June's long lighted days' sends you up or down and sometimes even sideways. Suicide figures increase markedly, and mental hospitals become clearing stations. Whether you call it 'spring fever' or 'the winter blues', it is profound, hinting at the deep roots of our evolutionary adaptation, showing how our brains are finely tuned to tailoring activities to the seasons around us. The strange and rising tide of perceived depression in modern human beings, living in artificial de-seasoned environments, may even reflect this loss of rhythm. By having alienated ourselves from the natural rotation of seasons, weather, heat, cold, rain, we may be psychologically attenuated, stuck in a no-man's land of cerebral stagnation.

The most obvious condition highlighting our meteorological susceptibility is seasonal affective disorder syndrome (SADS). The nearer you live to the North Pole the more common it is. In Canada up to 40 per cent or more of citizens are affected to some degree, but only about 5 per cent severely. Moving south can help, as can using a light-box. But the symptoms, usually depressive ones such as needing more sleep, losing concentration, feeling gloomy and sad, and wanting to eat more, may in fact be a form of primitive protection. Semi-hibernating, when there wasn't much food around, in the year one million BC (or thereabouts) could have been a useful way of getting through winter. You would have felt hungry of course but your reduced physical acitivity would have helped you get by despite poor nutrition. Such natural depression perhaps even left reserves of energy for the summer when there was hunting or crop-gathering to be done.

This weather sensitivity may be telling us that depression in its uncomfortable, but essentially minor, forms isn't bad for you. Having a natural low, especially in winter, may be important to enabling the natural 'high' of spring and summer. Not having the switch, because of artificial environments (and especially when people seem to be sleeping much less because of artificial light) may create the worst of both worlds. Winters will be a bit dull, but not unbearable, but summers won't be as full of zest as you would like. Either way the perception would be of a flattening, or something not quite right. Perhaps a useful analogy would be with the rising tide of allergic

BENALI / FRANK SPOONER

disorders. These may well be due to our ultra-hygienic environments, leading to a failure to develop antibodies to common bugs and germs, and the absence of any good cleansing fevers to burn off all the immune detritus that tends to gather.

### Intemperate temperaments

Another long-recognized aspect of the weather has been the notion of temperament in different peoples. The English, with all their fogs, rain and cold, have long been considered phlegmatic. That is to say, they are rather stolid, not obviously emotional, but with lots of stamina. By contrast, the so-called 'Mediterranean' temperament is meant to be more fiery and sanguine, reacting instantly to things, but inconsistent. Such stereotypes are being increasingly eroded by travel, inter-migration, and perhaps less weather-bound lifestyles. It is also very Eurocentric, since the range of temperaments seen in people living in the tropics is just as diverse. All we can say is that there is a general perception, in every culture, that weather modulates our state of mind. In Spain it is said that the highest suicide rates are found in a town at the southern tip, constantly bombarded by wind from the Atlantic. Lurid tales of cabin fever from the Arctic north can be matched with high summer murder rates in American inner cities. Much of this is the stuff of travellers' tales, but there is enough hard science to make it difficult to ignore.

Perhaps the people who best illustrate this are those living in the wrong weather system. I recall vividly an Ethiopian woman, living in North London, who seemed always to be in a state of high anxiety. She was frightened to leave the house, was constantly phoning her husband during the day, and developed panic attacks. A much-loved brother had died, back in her home country, and she found it hard to mourn for him, being unable to get him out of her mind and feeling guilty that somehow she had deserted him. Eventually she went back on holiday, and we all thought that the bereavement process would be completed, but her return to the UK saw her just as anxious. She got better to some degree with therapy and medication, but remained clinging, tearful and very dependent. She did finally admit that she couldn't stand the apparent 'heaviness' of the air, the cold and the damp in winter, and the sense that she could never feel warm and comfortable.

*The weather, in ways much more profound than the minor personal problems that pass for experience in the modern world, affects our very soul*

The colonial experience of India and the Far East had a reverse impact on a number of expatriates from England. Debilitated by the heat, wives and children would be sent home, flocking around hotels on the south coast, while working husbands struggled along for years alone in the heat, often drinking themselves to death. In fact, the rate of psychiatric breakdown amongst soldiers and civilians in India was such that there was a standard process for shifting people back, and a couple of asylums were assigned to looking after these Eastern casualties. The process of going mad was called Dulally-Tap, because the transit station for shipping people to England was based at a place called Dulally (Deolali)!

### Adapt and survive

Given that we can't dissociate ourselves, our moods and temperaments from the weather, that we are in every sense nature's creatures, perhaps it makes sense to go to where the weather suits your clothes. Some people apparently enjoy living in the permanent sunshine of Southern California. This may seem like fun, fun, fun, but where do they get those natural brain rotations that we need in order to relax or reprogramme? A lot of people get a paradoxical kind of mood swing in the winter, as witness the rush to ski and skate and luge. This strange desire to travel downhill very fast, in a semi-controlled skid, gives some people a buzz, while terrifying some of us out of our wits. Some of us actually like the rain. Whether sitting inside and listening to it, or walking through it and splashing along, it can be most therapeutic. I still miss the monsoons of my (far Eastern) childhood, with the sense of awe and comfort that all that water, falling and falling, seemed to give. Maybe the wonder of electrical storms with flashes of lightning arcing across the sky, is a kind of psychological electroconvulsive therapy?

The task therefore is to adapt yourself to the seasons as seems best. Accept the fact that you are going to be a bit sluggish perhaps in the winter (or if you are a paradoxical, in the summer) and line up your activities appropriately. The commonest complaint in doctors' surgeries all over the industrialized world is 'I feel tired all the time'. Which may be a way of saying please let me hibernate, rather than please put me on the Prozac.

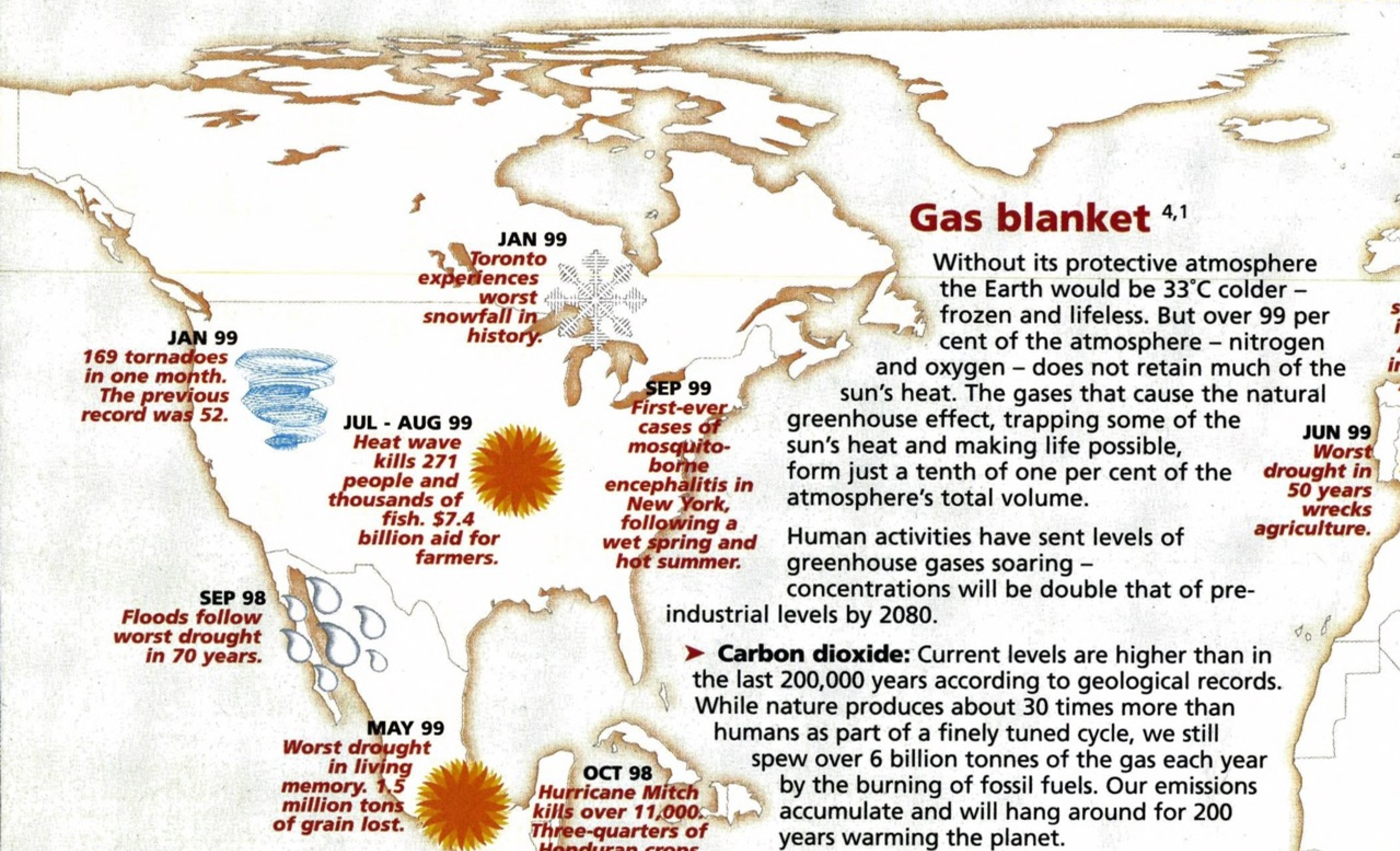
All the stuff about suicide rates and SADS and temperaments and the various forms of melancholia is telling us that we are adapted for seasonal change. We need our quiet periods, our hibernations, and we can't expect to be storming along all the time. Artificial environments may be convenient, whether they be air-conditioned shopping malls or strip-lit office blocks, but they block out the rotational rhythms that our brains need. And since we have spent some 2.5 million years adapting our pineal responses to a world of weather, perhaps we should think about this a bit more before plaguing the doctor with another complaint about headaches or tiredness or feeling a bit nervous. Maybe weather therapists could be the next form of alternative medicine? A week in a monsoon in rural India would perhaps be very good for the pineal and the soul. ■

**Dr Trevor Turner** is a consultant psychiatrist working for the National Health Service in inner London. With several publications to his credit, he is keen on trying to destigmatize mental-health issues.

# THE WEATHER – THE FACTS

**As global warming begins to k**
**where no violent weather has**

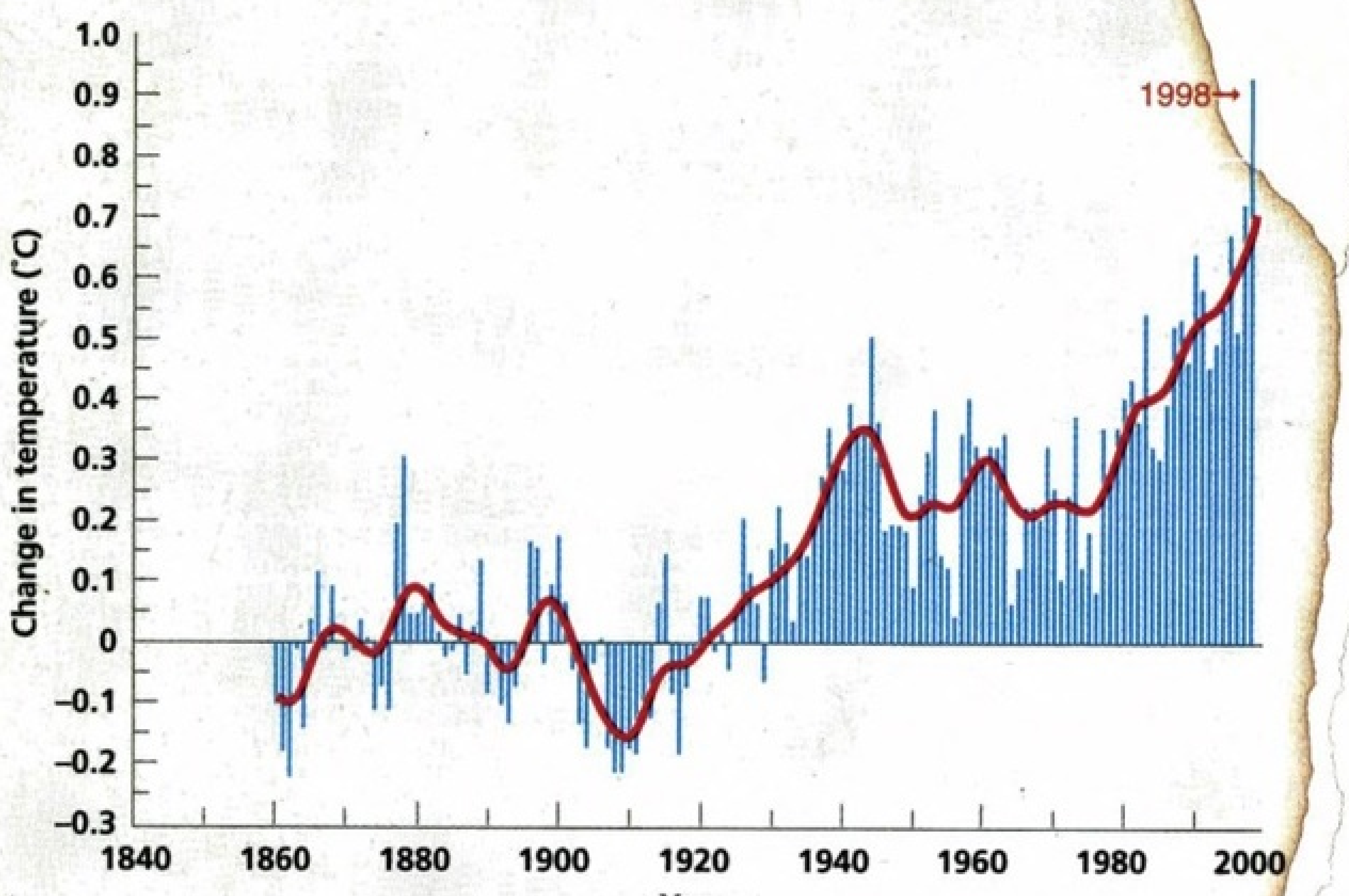
## Extreme weather events, Sept


JAN 99
Toronto experiences worst snowfall in history.
JAN 99
169 tornadoes in one month. The previous record was 52.
JUL - AUG 99
Heat wave kills 271 people and thousands of fish. $7.4 billion aid for farmers.
SEP 99
First-ever cases of mosquito-borne encephalitis in New York, following a wet spring and hot summer.
FEB 99
Heaviest snowstorms in 40 years. Avalanches in the Swiss, Austrian and Italian Alps.
JUN 99
Worst drought in 50 years wrecks agriculture.
SEP 98
Floods follow worst drought in 70 years.
MAY 99
Worst drought in living memory. 1.5 million tons of grain lost.
OCT 98
Hurricane Mitch kills over 11,000. Three-quarters of Honduran crops destroyed.
MAY 99
25,000 people displaced by floods.
MAR 99
Floods in Sao Paolo leave 10,000 homeless.

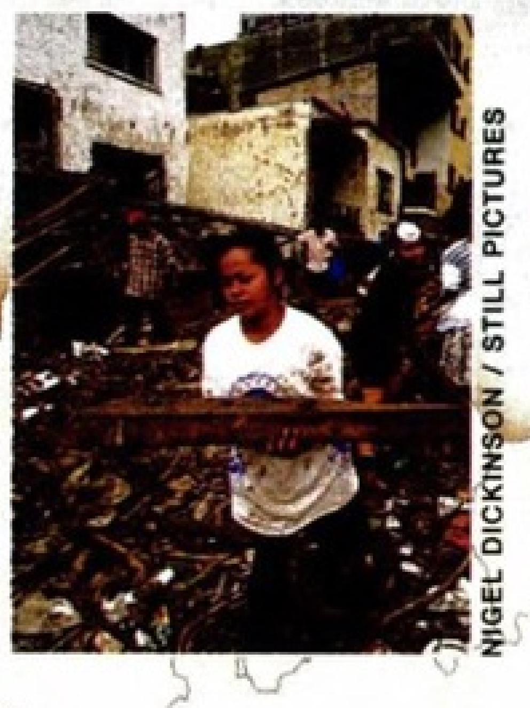
## Heating up

The average temperature of the Earth evens out at around 15˚C, creating a hospitable climate for innumerable life forms. But since the end of the last century temperatures have crept up by 0.6˚C, a seemingly tiny change, but significant as scientists say the maximum increase the planet can bear without climatic chaos is just 1˚C. A global cooling of just 3˚C brought on the last Ice Age. Unless we act now, we are on course for a warming of 3˚C by 2100.

In the past two decades the mercury has surged – nine of the hottest years on record have occurred since 1988. Temperatures are rising faster than for the past 10,000 years and 1998 has been dubbed the hottest year of the millennium.[1,3]



**The thin blue lines represent yearly fluctuations. The red line indicates the general trend.[3]**


NIGEL DICKINSON / STILL PICTURES

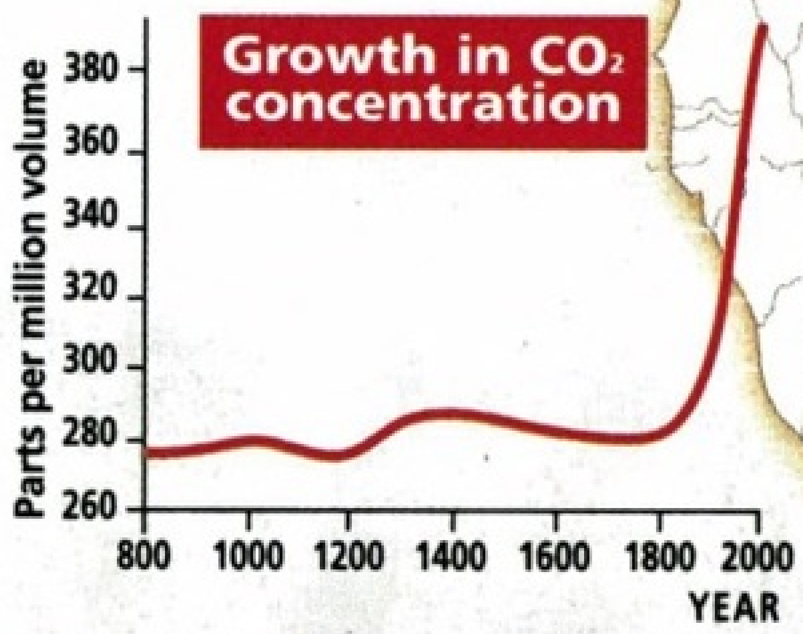
## Gas blanket[4,1]

Without its protective atmosphere the Earth would be 33˚C colder – frozen and lifeless. But over 99 per cent of the atmosphere – nitrogen and oxygen – does not retain much of the sun's heat. The gases that cause the natural greenhouse effect, trapping some of the sun's heat and making life possible, form just a tenth of one per cent of the atmosphere's total volume.

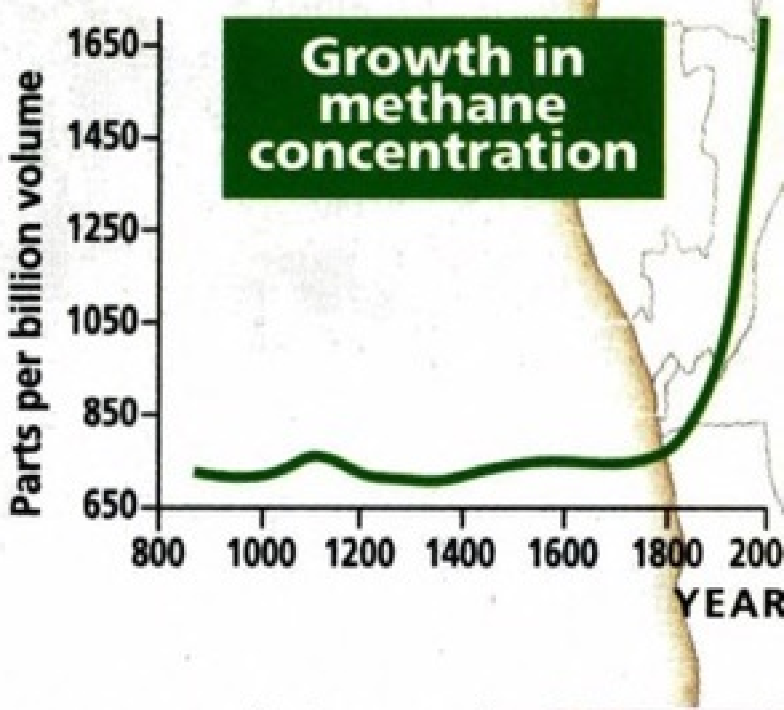
Human activities have sent levels of greenhouse gases soaring – concentrations will be double that of pre-industrial levels by 2080.

➤ **Carbon dioxide:** Current levels are higher than in the last 200,000 years according to geological records. While nature produces about 30 times more than humans as part of a finely tuned cycle, we still spew over 6 billion tonnes of the gas each year by the burning of fossil fuels. Our emissions accumulate and will hang around for 200 years warming the planet.

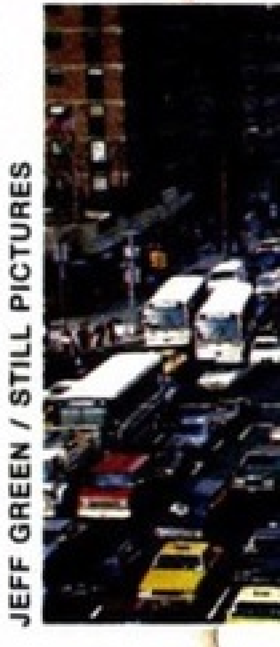
ALAIN LE GARSMEUR / PANOS



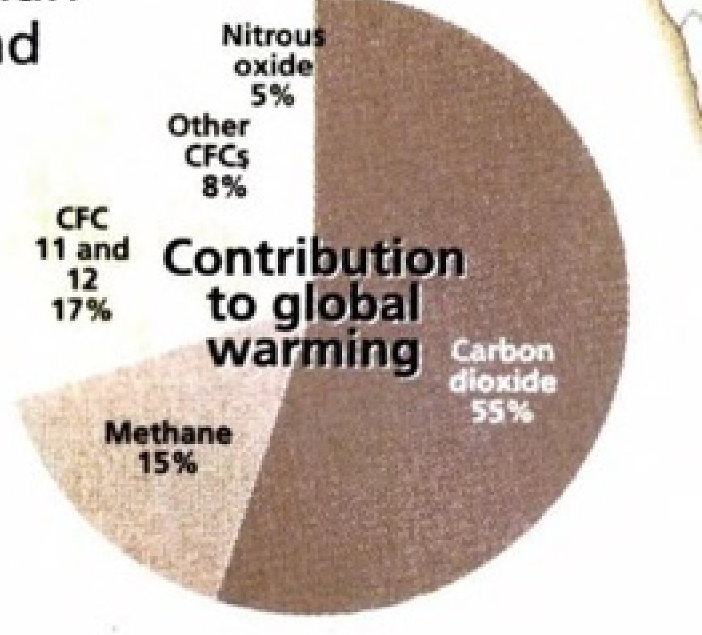
➤ **Methane:** Twenty times more powerful than carbon dioxide, methane levels have risen a full 100 per cent since the Industrial Revolution. This gas is created through deforestation, decomposition of waste, and rice and cattle production and stays around for 12 years.



➤ **Nitrous oxide:** Heavy use of chemical fertilizers in industrial-style agriculture has increased levels of this gas which is 200 times more powerful than carbon dioxide and stays around for 120 years.


JEFF GREEN / STILL PICTURES

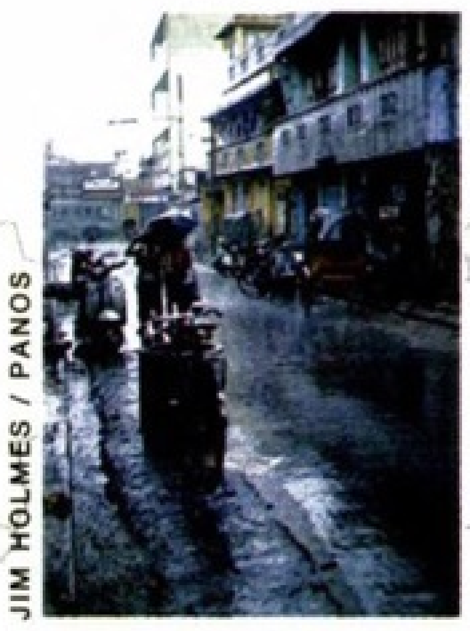
➤ **Chlorofluorocarbons:** These new gases are brought about by human activities such as refrigeration and air-conditioning. Their warming effect is thousands of times stronger than carbon dioxide. Although being phased out they will linger for several thousand years.



**k in, the world's weather is changing. Extreme weather events are becoming more common and more intense. Even een observed, temperature changes are in the offing with consequences for all life – human, animal and plant.**

## mber 1998 - September 1999 [1,2]

**MAY 99**
*Forest fires blaze in Siberia as a result of high temperatures.*


JIM HOLMES / PANOS

BRADLEY ARDEN / PANOS

**MAY 99**
*Cyclone sweeps away coastal villages, affecting 150,000, and killing 160.*

**SEP 98**
*Floods kill 2,000, leave 14 million homeless. 240 million affected. Damage $30 billion.*

**JUN-JUL 99**
*Yangtze river floods kill 725, affect 100 million. Damage estimated at $8.1 billion.*

**MAR 99**
*High temperatures and delayed rains devastate wheat crop.*

**SEP 99**
*Worst heatwave in 110 years ends.*

**JULY - SEPT 98**
*Worst floods in history. Two-thirds of land flooded. 30 million homeless. Damage $5 billion.*

**SEPT 98**
*End of worst heatwave in 50 years. Over 4,000 dead.*

**APR 99**
*Spring rains fail. Five million at risk of food shortages.*

**DEC 98 - MAR 99**
*Failure of two successive rainy seasons. Half a million pastoralists affected; a quarter of their stock lost.*

**MAR 99**
*Cyclone Vance causes extensive flooding and damage.*

**APR 99**
*End of second drought in a row. Damage to farmers more than NZ$500 million.*

## The fallout [5,1]

Weather instability can hit any part of the world – but already vulnerable areas are in the greatest danger. Ninety-six per cent of all deaths from natural disasters happen in developing countries. People living in insecure housing on marginal land are the most at risk.

➤ In the period 1987 to 1996, 44% of all recorded floods were in Asia, yet they caused 93% of all deaths.

➤ Losses worldwide due to extreme weather in the first ten months of 1998 exceeded the total for the entire 1980s. Munich Re, a reinsurance giant, estimated the costs at $90 billion.

➤ 1997-98's El Niño, fiercer than usual due to global warming, claimed the lives of 21,000 people due to floods, forest fires, droughts and disease. Most lived in the Majority World.

➤ Environmental refugees, forced from the most fragile lands in the Majority World, are now thought to number 25 million.

➤ Western Africa is seeing increased droughts, exacerbated by deforestation, which have brought famines and top temperatures that are up to 30°C higher than the norm.

➤ Unseasonable heavy rains in early 1998 in Kenya caused a cattle disease called Rift Valley Fever to jump the species barrier and kill more than 1,000 people within a few weeks. Such nasty surprises are becoming all too common.

RICH WORLD
**Hurricane Andrew (August 1992)**
**US**
Losses:
**$22 billion**
Amount covered by insurance:
**$16 billion**
Death toll:
**52**

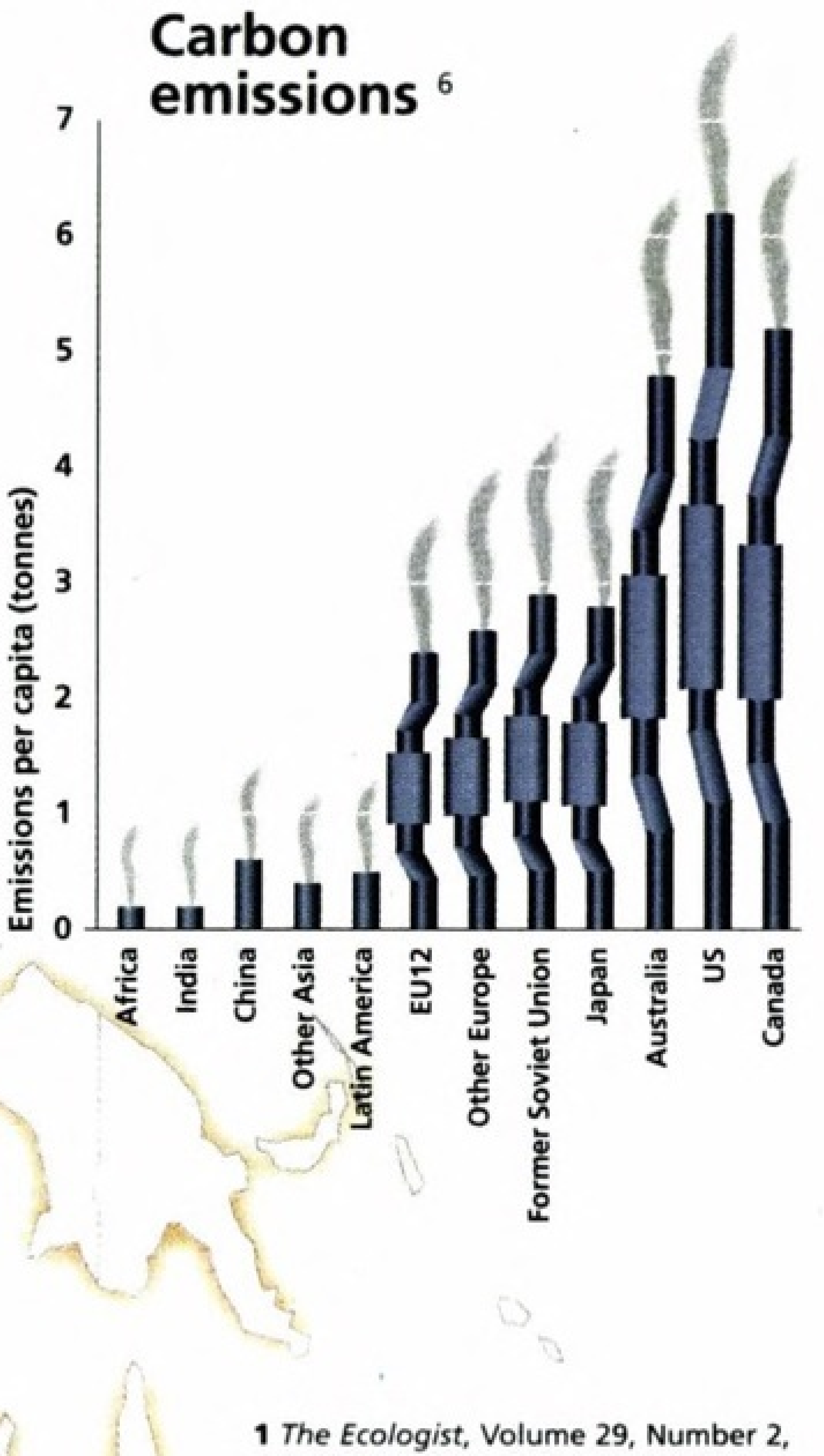
POOR WORLD
**Hurricane Mitch (October 1998)**
**Nicaragua and Honduras**
Losses:
**$7 billion**
Amount covered by insurance:
**$150 million**
Death toll:
**over 11,000**

## The finger of blame

Historically industrialized countries have contributed up to 90% of the greenhouse gases that are tipping the world's weather system out of joint.

Today, the US, with 4% of world population, emits nearly a quarter of all greenhouse gases – equal to that of the entire Majority World, which has nearly 80% of world population.

### Carbon emissions [6]



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**1** *The Ecologist*, Volume 29, Number 2, March/April 1999. **2** Environmental journalist Ross Gelbspan's website http://www.heatisonline.org/. **3** *Climate Change and Its Impacts* (The Met Office, November 1998). **4** *Climate Change: Awareness and Action* by Dave Mussell, Juleta Severson-Baker, Tracey Diggins (Pembina Institute for Appropriate Development, 1999). **5** *World Disasters Report 1999* (International Federation of Red Cross and Red Crescent Societies, 1999). **6** 'Justice Equity and Efficiency in Climate Change: A Developing Country Perspective' by PR Shukla in *Fair Weather? Equity Concerns in Climate Change* ed. Ferenc L Tóth (Earthscan, 1999).

**Nicola Baird** reveals the power and mystery of rainforests, whose destruction is making the Earth short of breath.

Jungle magic: illustration by Solomon Islands' artist Marcellin Maetarau

# Breathtakin

'Come and listen to this!' instructs my friend Dorothy as she clamps a pair of headphones over my ears in a Melbourne record store. The CD whirrs and then I hear the unmistakable rhythm of cicadas and rain. It is followed by the haunting voice of a woman singing *a cappella*. At once I think of my first trip into the rainforest – the agonizing skid down the ridge on a steep, sticky red path, made possible only by grasping tree roots and vines and then the perfect pay-back: a swim in the cold bright water pool at the base of a waterfall. There were orchids overhead, parrots chattering as they flew in gangs between the thin buttressed trees – seemingly hundreds of metres above the sunny tropical sky's peak of blue.

The song ends and I take off the headphones reluctantly. Outside a tram rumbles across the city. The song triggers so many memories of rainforest '*walk about*' around Papua New Guinea and Solomon Islands that Dorothy has to shake my arm to get any response. 'Do you recognize it? That old woman is from Solomon Islands!' I stare at her stupidly. 'Yes,' she insists breathlessly, 'that old woman – who has never worn shoes in her life and has never even seen a CD – who sits all day singing lullabies to her grandchildren under the *ngali* nut tree on a tiny island, is now singing to the world.'

*The rainforest is sanctuary, larder, bank and inspiration*

She sings in her own language of course, but Dorothy knows it well. Her mother is from the same area – Lau, the northeastern tip of the island of Malaita, about 24 hours' boat-, truck- and canoe-ride away from the Solomon Islands' capital Honiara. Like most of the Solomon Islands' 1,000 or so isles, Malaita is heavily forested. Although the people of Lau have lived further from the rainforest than almost any other of the country's 80 or so language groups – instead of struggling to make a life deep in the bush their ancestors built artificial islands around the Lau lagoon – every part of their lives is shaped by its presence. The rainforest is celebrated in their carvings, dances, songs, traditional customs, beliefs and stories. It is sanctuary, larder, bank and inspiration.

The rainforest – whether the Brazilian Amazon, the African jungle or these forested islands of Oceania – is well named. Most afternoons, during the rainy season, the thunder clouds build up and the humidity rises until at last the rumbles turn to roars, the wind picks up and the rain starts cracking to the ground. Where there is no tree-cover the first of the big heavy drops can be heard long before great sheets force their way to the ground. It is so noisy that it can be hard to hear anyone talk as the drops splosh on to the ground then bounce right back up again to give anyone caught in the downpour a double soaking. But in the forest the tree canopy becomes an umbrella softening the rain's force, its direct path to the ground constantly re-routed as the water runs off glistening green leaves.

At night the rainforest is cloaked by darkness; the bright stars of the southern skies and the moon are hidden by layers and layers of leafy canopy. But it is far from quiet – turned into an amphitheatre of the sounds of life by a cast of chattering frogs, flying foxes (bats) and insects. Never is the forest less accessible to people – or more magical – than at night.

The incredible way that rainforests – and all the life that lives in them – function is just as magical. Tropical forests are found on very poor, shallow soils. To combat this, nature has honed spectacular recycling skills. In the rainforest this recycling is almost visible as the steamy heat makes everything decay fast. Stand on a log and at once it breaks into saggy wafers of timber. And as it rots a multitude of organisms – from insects to fungi – compete for the nutrient feast.

## Global thermostat

The forest is also a living store of carbon; it forms about half of every tree. Because trees function by photosynthesis, drawing down carbon dioxide (one of the most damaging greenhouse gases) from the atmosphere, the rainforest functions as a massive carbon storehouse or carbon sink. This carbon will only be released in a way that is damaging for the atmosphere if it is burnt – if it falls down, the recyclers of the rainforest take care of it. But destroy the trees and the world risks running low on places where carbon generated by car exhausts, planes and industry can be stored safely. Worse still, some climate scientists fear it could be just 100 years before the world's last remaining rainforests are put under such stress that they turn from essential carbon sink into a massive source of carbon dioxide – with unthinkable consequences to the delicate balance of life on earth.

Rainforests play another critical role: they are the world's thermostat. The hot, humid air generated over the rainforest, particularly the vast Amazon, is carried away in massive rain clouds and then in great air masses high in the atmosphere before being distributed as rain and warmth over cooler zones. This means that any loss of healthy rainforest could trigger serious climatic changes worldwide. For example, Northern Europe and Scandinavia could end up drier and colder, causing havoc to agriculture and people's lifestyles.

Yet despite its importance few people nowadays can cope in the rainforest without specialist help. That's why outsiders – whether scientists, tourists or city dwellers like me and Dorothy – have to rely on the skills of local people even on the shortest of bushwalks. In the forest, newcomers quickly get lost. They sweat, they squelch

through mangroves, they suffer from blisters as their booted feet stay damp from crossing and re-crossing rivers, sometimes the only practical route in and out of the forest. Bodies respond with a yeasty smell and fungal infections. It is all one can do to cope with the physical challenge of keeping upright along a slippery forest trail in 30°C, in 90-per-cent humidity, in hot sun, then a downpour, then steaming heat and finally the cold of a dark forest night. This is not the friendly boardwalked rainforest of tourist Queensland, the sunlit groves of Disney's *Jungle Book* or the air-con recreation of the Rainforest Café chain – so popular it even has branches in Mexico, not far from where the rainforest used to be. This is the real thing. No wonder the rainforest at first seems a dull place to the visitor used to zoo exhibits of hyacinth macaws and chattering monkey troupes. And it's this lack of understanding which has helped allow so much of the world's forest to be abused.

*In the forest newcomers quickly get lost. They sweat, they squelch through mangroves, they suffer from blisters as their booted feet stay damp from crossing and re-crossing rivers*

## Learning to see

On paper it is easier to appreciate the varieties of green, the staggering shapes of leaves, the tangle of liana vines, the unique niche each forest plant, insect and bird has engineered for itself to ensure the best possible chances of survival. In the scattered forests of the Solomons there are 170 species of birds, many of which have developed distinctive forms. There are 4,500 plant species, with 230 varieties of orchids alone. The butterflies are huge. Reptiles thrive and the seas teem with life – much of it spawned in the mangrove forests on the islands' shores.

Yet it takes a lifetime to learn how to see all that is there – not least because so many of the animals, reptiles and invertebrates mimic the colours and shapes of the vegetation around them.

Even in a country as small as the Solomons the forests are very different. There are the buttressed trees of Rennell which manage to cling to a pitted grey coral floor; the amazing virgin forest left standing in the mist on the top of the circular island of Kolombangara; the steep tree- and fern-covered slopes of volcanic Savo with its bubbling hot geysers and the perfect islands scattered around the World Heritage-listed Marovo lagoon. Much of the wildlife is gentle and unique to the islands. My favourites are the smudgy grey ibis, the glistening white cockatoos that can be seen patrolling the forests of Isabel, the flying foxes which roost together at dusk, the chattering frogs of Malaita or the flightless black hen which uses the volcanic black sands of Ngella province as an incubator for her eggs.

Sadly there are also ruined forests. Many islands have been logged with little care for this fragile environment. Flying over the country, in one of the small Twin Otter planes which hop between the island airstrips cut from the bush, it is easy to see the damage. Where the loggers – typically Malaysian companies selling to Japan – have opened up the forest there are massive red scars. When it rains these logging roads turn into streams washing the thin layer of forest soil away. This turns the rivers cloudy and eventually suffocates the coral reefs with a blanket of sediment, driving the fish away. From the air it looks as if the forest is bleeding into the sea.

## Sinking spiral

In the villages where the trees have gone, life is no longer worth singing about. Growing food is hard because the thin layer of fertile soil gets washed away during the rains – so dollars are needed to buy essentials like rice. The clear water is muddied, causing outbreaks of sickness and creating an endless struggle for women to find safe, clean drinking water for their families. The lack of tree cover can lead to devastating floods for the villagers and far less protection from the Pacific's deadly weather foe, the Christmas season of cyclones. Removing the trees can also trigger unusually long periods of drought, adding to the hardships of people more used to daily downpours.

The destruction of the forest may bring a short-term bonus – dollars – for some families, but in the long term it makes life so much harder for everyone. As Dr John Collee, writing in the *Observer* newspaper during his stint as an island doctor at Gizo Hospital in Western Province, points out, destroying the forest destroys the individual. 'The lifestyle of Solomon Islanders has evolved, like the rainforest around them, over many generations. When you destroy the individual's lifestyle, you destroy the individual, which is why, inevitably, the health of these islanders deteriorated dramatically in areas which have been logged. Their fishing and gardens are destroyed so we see malnourished children in the hospital. Their social structure is destroyed so we see crimes of violence and venereal disease. Their water supply is destroyed so we see skin infections and water-borne diseases. Their men become drunkards, their women turn to prostitution, their children buy cheap sugary drinks and rot their teeth.'

These are devastating effects – and yet even this suffering in the Solomons is nothing compared to the worldwide misery which will surely occur if the rainforests, and the amazing biodiversity within them, continue to be removed.

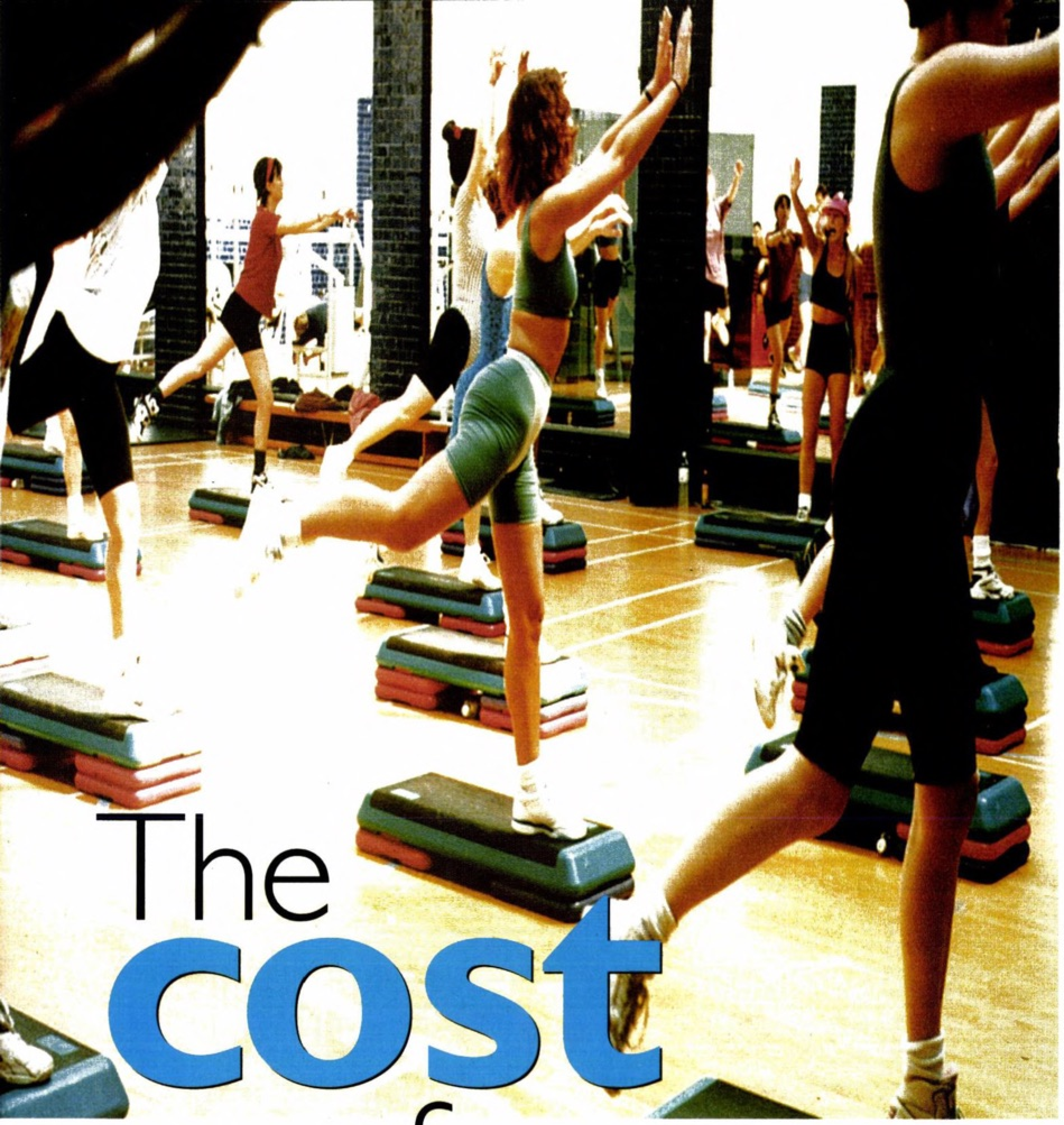
## Smoke signals

Even before the worst predictions can come true, we are running into trouble. Only a few months ago Indonesia was forced to declare a state of emergency because of the return of a deadly smog caused by fires in the forest. These fires were not started by lightning strikes – they were set off by people clearing patches of forest land for agriculture. And it's happened before – between mid-1997 and early 1998 ten million hectares of forest were wrecked in the region. Not only have the fires destroyed pristine rainforest and wiped out rare species, they have also created a thick choking smog which has caused shipping collisions, traffic accidents and even an aircraft crash. Billions of dollars have been lost in neighbouring Malaysia as tourists have cancelled holidays, airports have closed, schoolchildren have been sent home and the number of people suffering from asthma, bronchitis and breathing difficulties has soared.

In a region where sitting down to story is one of the best parts of life, it is strange that the modern storytellers, the media, can't make people see climate change as the apocalyptic force all the pointers suggest it is going to be. Perhaps there is something in the sheer scale of it which makes it hard to believe.

Dorothy has brought me to a downtown Melbourne record store because she knows I'll find it hard to believe an old woman from the Solomon Islands – who has never even learnt to speak English – could end up on a CD played in sitting rooms all over the world. I may be surprised, but at least this woman's heart-felt song from her forested homeland is alerting the world to the magic and mystery of the rainforest. Few of us – even journalists like Dorothy and myself – can manage anything like that. ■

**Nicola Baird** is an environmental journalist based in London who has worked in the Solomon Islands and gone back for numerous visits. She has written several books including *A Green World?* (Watts,1997) and *The Estate We're In: Who's Driving Car Culture* (Indigo, 1998).



Working the body beautiful: a good sweat is recommended.

S HILL / FRANK SPOONER

# The cost of cool

**Michael Peel**

reports on the rich world's love affair with conditioned air.

THERE is a chill in the air at Cannons gym, a favourite lunch-time haunt of City of London workers. The sports centre, plagued this year by soaring temperatures, has souped up its air-conditioning so much that at quiet times a session resembles a polar version of purgatory.

It is just one example of the casual overuse of air-conditioning apparent in the Western world. It has become a central feature of work and play, a prestige symbol of humanity's ability to control the climate.

But the electricity air-conditioning systems burn up make them a significant and growing contributor to climate change. They are unpopular even with those they serve, most of whom prefer old-fashioned cooling methods such as opening windows and sitting in the shade.

Yet in Britain the use of air-conditioning is predicted to grow four-fold by 2020. Per-capita, the US is already drawing almost seven times that forecast, and Japan twice as much. In both countries, air-conditioning accounts for more than five per cent of the total electricity used in buildings.

These figures are far greater than they ought to be, says the Building Research Establishment (BRE), a consultancy formerly owned by the British Government. Many air-conditioned buildings could make far better use of other cooling methods. They could take advantage of daylight and natural ventilation, reduce glare and have thicker walls that absorb heat during the day and radiate it away at night. These measures may sound obvious, but they can yield telling results: the BRE has put up a prototype office building that uses 30 per cent less energy than the best of the present bunch.

While the project might attract environmentalists and companies looking to reduce running costs, it cuts less ice with developers. For them, the emphasis is on throwing up a building in the shortest time for the lowest capital outlay. What follows completion is largely irrelevant.

Also many offices are built speculatively, meaning they are less energy efficient than if they were designed with a specific end use in mind. Location can be a problem, too, as the built-up areas where companies want to buy often allow little scope to exploit features such as prevailing winds and sunlight.

Energy efficiency often comes low on the list of priorities for builders of houses, too. Here the main problem is one of duplication: a building designed to benefit from facing a certain way is of little use on an estate where homes are oriented in many directions. It is, however, far too simplistic to blame developers alone for this orgy of inefficiency. Companies reason, quite logically, that people will work better when cool and unflustered. If that entails air-conditioning and higher running expenses, so be it. But the drain from equipment can also be heavy, with the air-conditioning used to keep a computer's temperature down typically costing as much to run as the machine itself. The energy that goes into cooling a subterranean City dealing floor packed with people and hardware is 'astronomical', says the BRE.

Despite all this, innovative systems of cooling are being developed and offices are being better tailored to their functions. A museum under construction in Bristol features a tank of eutectic salts, which absorb energy as they melt in the heat and release it as they re-solidify when it gets colder.

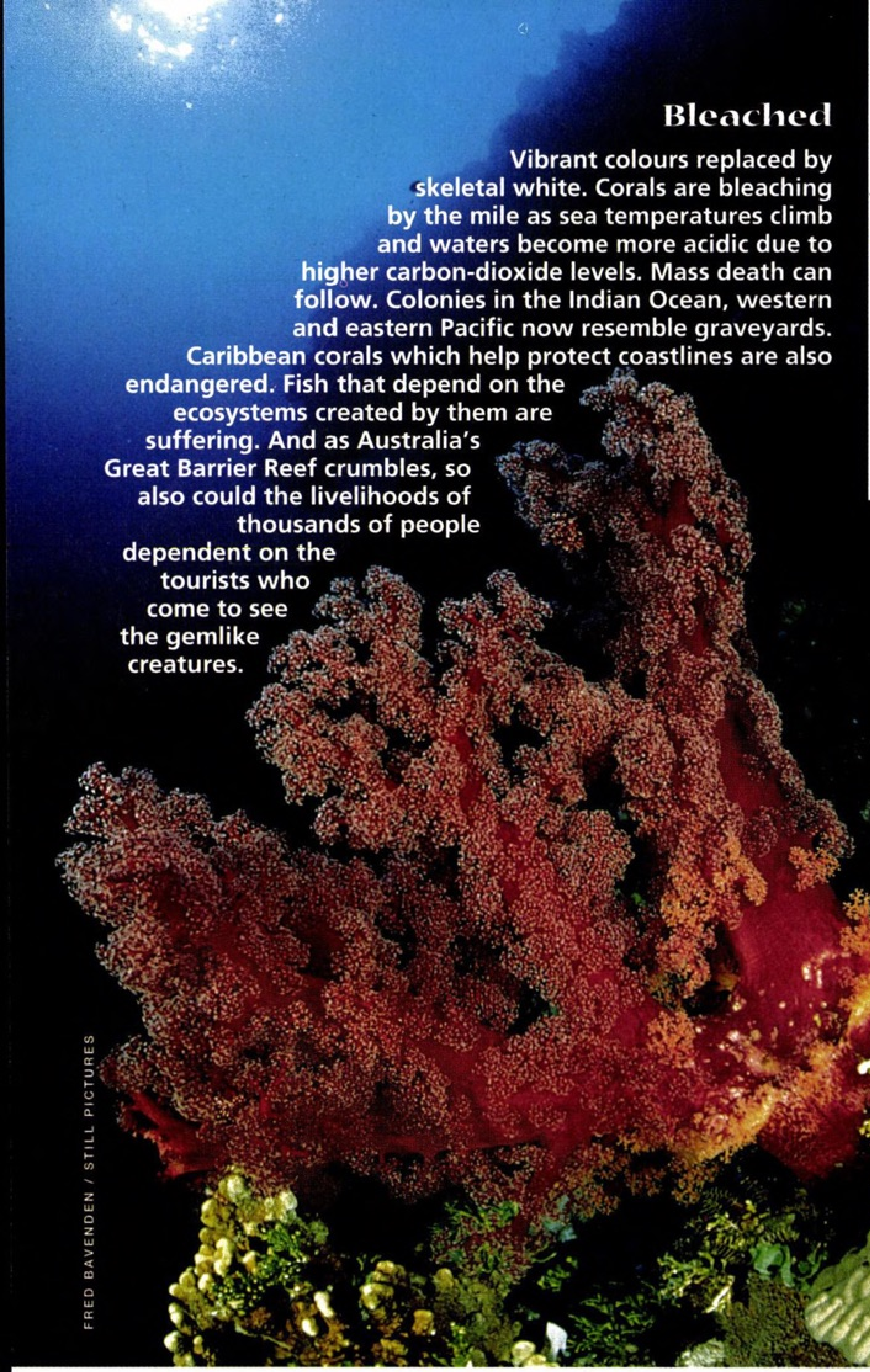
Traditional cooling methods pioneered in some of the world's hotter countries could also provide solutions. Such as the onion model in which a building is divided into several layers, with the inner core providing cool in the summer and warmth in the winter.

There is, of course, always the siesta option – but that would require a pretty sharp change in public attitudes in frenetic societies such as Japan and the US, not to mention chilly old Britain. Why even vehicle air-conditioning is recording a phenomenal growth in Northern European countries where the climate hardly makes it essential. In Britain, the number of cars with it installed is expected to rise from 5 per cent in 1992 to 62 per cent in 2002. It is, says the Society of Motor Manufacturers and Traders, what people want.

Yet a Harris Research Centre poll of office workers could cast some doubt on this conviction – 89 per cent of them preferred buildings without conventional air-conditioning. If all else fails, this might just be the stumbling block that stops artificial cooling methods in their tracks. air-conditioning feels unnatural, and no amount of advertising or technical refinement is going to persuade people otherwise.

This point has already been made subconsciously by the Cannons members who complained about the gym's atmosphere earlier this year. The main reason it seemed unsatisfactory was surely because it suffered by comparison with the crisp river air available outside. ■

**Michael Peel** is a *Financial Times* journalist.



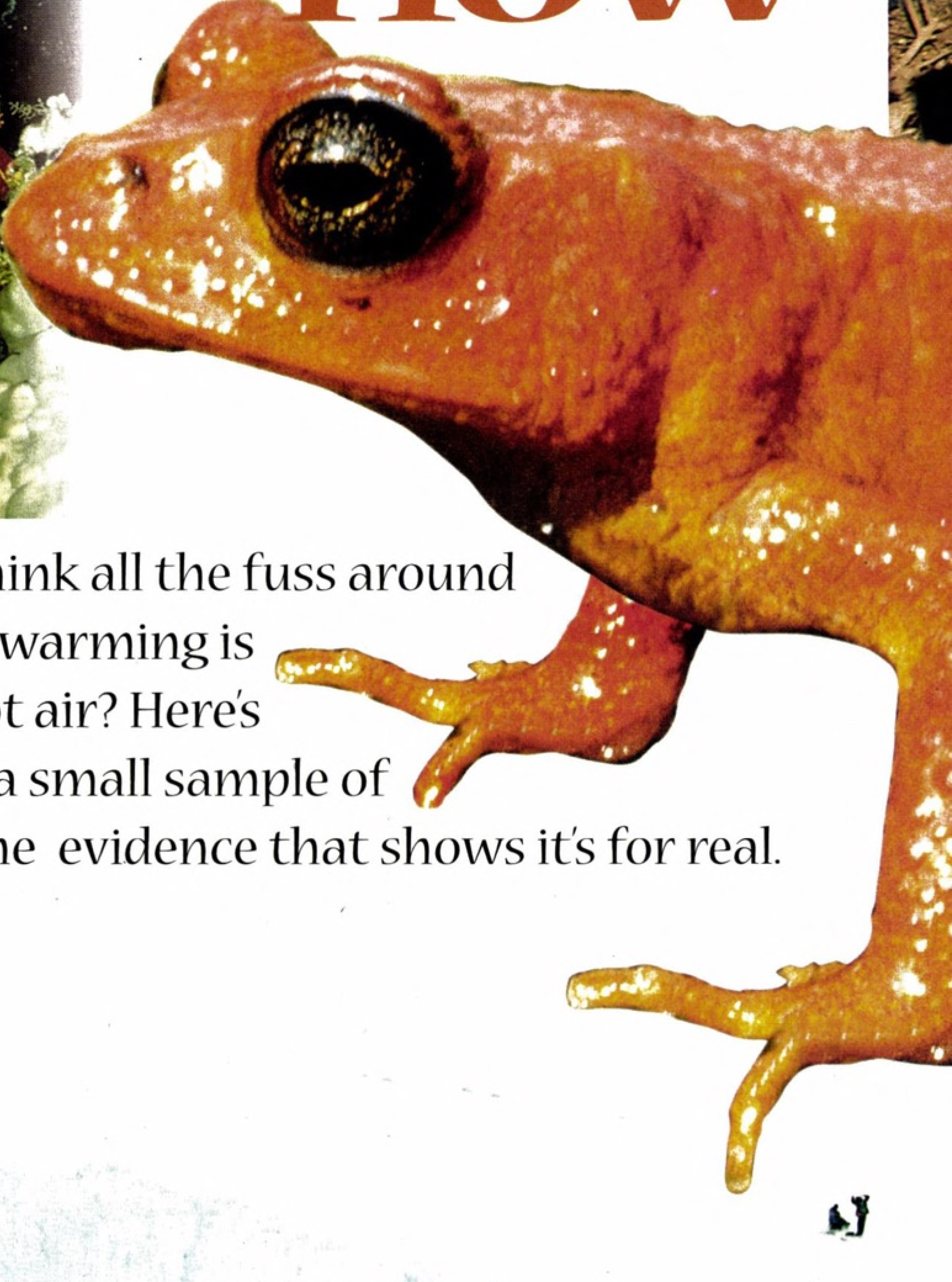
FRED BAVENDEN / STILL PICTURES

### Bleached

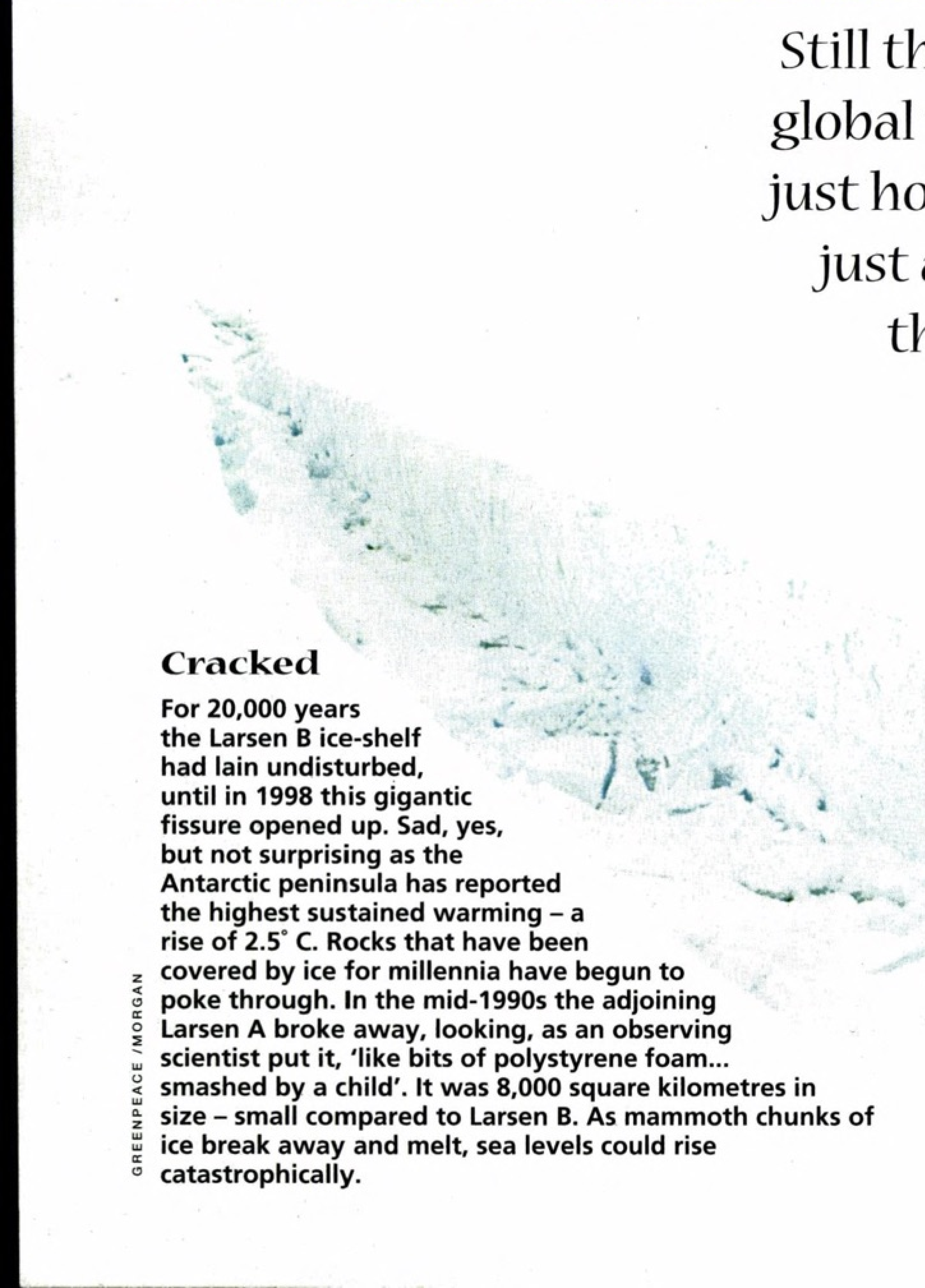
Vibrant colours replaced by skeletal white. Corals are bleaching by the mile as sea temperatures climb and waters become more acidic due to higher carbon-dioxide levels. Mass death can follow. Colonies in the Indian Ocean, western and eastern Pacific now resemble graveyards. Caribbean corals which help protect coastlines are also endangered. Fish that depend on the ecosystems created by them are suffering. And as Australia's Great Barrier Reef crumbles, so also could the livelihoods of thousands of people dependent on the tourists who come to see the gemlike creatures.

GREENPEACE / GRACE

# Future is now



Still think all the fuss around global warming is just hot air? Here's just a small sample of the evidence that shows it's for real.



GREENPEACE /MORGAN

### Cracked

For 20,000 years the Larsen B ice-shelf had lain undisturbed, until in 1998 this gigantic fissure opened up. Sad, yes, but not surprising as the Antarctic peninsula has reported the highest sustained warming – a rise of 2.5° C. Rocks that have been covered by ice for millennia have begun to poke through. In the mid-1990s the adjoining Larsen A broke away, looking, as an observing scientist put it, 'like bits of polystyrene foam... smashed by a child'. It was 8,000 square kilometres in size – small compared to Larsen B. As mammoth chunks of ice break away and melt, sea levels could rise catastrophically.

## Devastated

The work of survival resumes in the aftermath of Hurricane Mitch in Honduras. Hitting Honduras and Nicaragua at the tail end of October 1998, Mitch killed some 11,000 people. It had been downgraded from a hurricane to a tropical storm when it hit Honduras. But with winds forced to rise by mountain ranges, it dropped a year's rainfall in just two days. In its path were the flimsy homes of people crowded on to marginal lands, which were either washed away or buried under the million or so landslips that occurred. For heavily indebted Honduras, the damage in money terms was equal to 60 per cent of its annual gross domestic product. Last year's El Niño, which triggered Mitch, caused more damage than usual – a fact commentators link to global warming.

NIGEL DICKINSON / STILL PICTURES

## Croaked

The golden toad of Costa Rica is gone forever. A denizen of the misty, humid highland forests near Monteverde, it has been killed by warmer temperatures. The forest today is drier with fewer mists and higher clouds. The moist, breathing skin of the golden toad fell prey to infection – a fate shared by other amphibians. Frogs and toads worldwide are showing freakish deformities and skin abnormalities as a result of their sensitivity to rising temperatures and ultraviolet radiation.

ARNOLD NEWMAN / STILL PICTURES

## Vulnerable

A slender finger into the sea, Tarawa atoll is part of the idyllic-looking but fragile Pacific island nation of Kiribati. The United Nations Environment Programme has recommended the immediate evacuation of Tarawa as it is at risk of sinking under storm surges from the rising sea. Already some small islands fringing Kiribati have disappeared. Roads have had to be moved inland on the main island as the ocean gnaws into the shore. With increasingly stormy weather battering them, nearly 40 other islands worldwide are in the same scary boat.

GREENPEACE / DEAN

# Smokesc

JULIO ETCHART / STILL PICTURES

The World Bank claims to be concerned about the environment. So what is it doing stoking the flames of global warming in China? **Kate Hampton** smells a rat.

THE name sounds promising – the Western Poverty Reduction Project. But behind it lurks a nefarious plan to resettle nearly 58,000 Chinese farmers on to fragile nomadic lands in Tibet and Inner Mongolia, posing a serious threat to indigenous cultures. It has naturally drawn sharp criticism from human-rights groups. But that hasn't stopped the World Bank from financing it, despite objections from virtually every executive director on its board. Confident of its power, the Chinese Government has threatened economic reprisals against any country opposing the project. And the World Bank seems to be turning a blind eye to its own policies on social and environmental impacts. It would appear that the largest multilateral development bank in the world needs China more than China needs it.

Less-known is the World Bank's multi-billion-dollar investment in the most polluting of fossil fuels – coal – in the most populous nation in the world.

This investment needs to be seen against a certain background. The US is the largest stakeholder in the World Bank, providing 18 per cent of its funds. In 1997 the US Senate passed the Byrd-Hagel resolution requiring the administration to take no action on climate change until key developing countries such as China also 'participate meaningfully' in taking steps to reduce their greenhouse-gas emissions. The US could, if it wanted to, redirect its investments to China away from coal to help make this happen.

The environmental stakes could not be higher. With a population of one billion and rapid economic growth, China represents the greatest emerging challenge in the fight for climate stability and the control of greenhouse-gas emissions. If China is not to supersede the United States as the world's biggest climate wrecker within the next ten years, it will have to make a quick transition away from coal-fired industrialization to a sustainable energy regime.

Roughly 76 per cent of China's energy needs are currently met by coal – a fuel which emits the highest proportion of the geenhouse gas carbon dioxide per unit of energy produced. The nation currently accounts for about 10 per cent of world energy consumption and over 13 per cent of the world's carbon-dioxide emissions. By 2010, it is expected to reach 25 per cent of worldwide emissions.[1] In addition to being the biggest coal consumer, China also uses it more inefficiently than other major energy-consuming countries.[1] Yet the mistakes of the industrialized world are being repeated in China using public money with potentially devastating consequences for the world's weather.

Between 1988 and 1997, OECD countries (members of the Organization of Economic Co-operation and Development, the rich democracies) spent $11.4 billion on coal projects in China, accounting for about a third of the finance for the 40 new coal-fired plants built over this period.[2] The result is regional surpluses of commercial power, increasing emissions and alarming levels of air and groundwater pollution. The World Bank estimates that air and water pollution already costs China about $54 billion every year.[3] Meanwhile, poverty remains pervasive, especially in rural areas off the electricity grid where farmers and their families fail to benefit from the energy boom.

## Propping pollution

The World Bank's own research advocates renewable energy as the most efficient means of meeting the energy needs of the rural poor. So it is reasonable to expect that the Bank, whose *raison d'être* is poverty alleviation, would be spending most of its cash on renewables, even if other agencies do not. Instead, only ten per cent of the World Bank's energy portfolio is spent on renewables;[4] most of the rest goes to prop up oil, gas and coal developments around the world. China, the Bank's biggest client over the last decade, is no exception. For the coming eight to ten years the Bank will be loaning between $50-$100 million to China for renewable energy purposes. In sharp contrast, in 1998 alone the Bank spent $1.35 billion in China on building coal-fired power plants.[4]

The rationale for using coal is its domestic abundance. But it is widely acknowledged that China will have to import increasingly significant amounts of raw materials and/or electricity in the future. Investing in renewable energy would help to reverse this trend and experts agree that the country's potential wind-power resources are huge. There are pockets of successful investment in renewable energy – Inner Mongolia generates 40,000 kilowatts of windpower. The region has an estimated windpower potential of 100 million kilowatts. But by and large transaction costs remain prohibitively high as opposed to the generous foreign and domestic subsidies available for fossil fuels.

The Government acknowledges that dependency on coal is bringing economic growth into conflict with environmental objectives. However, current efforts to reduce this dependency are focused on developing the contributions of natural gas, nuclear and hydropower – none of which are desirable on environmental grounds – and on restricting the coal supply by closing the least efficient mines. So far, the Government is on target, but the target is only set at reducing coal dependency to 70 per cent.[5] As part of the restructuring, Chinese authorities are allowing foreign investors to hold a majority share in coal projects and recently established a preferential loan and fee-exemption policy for coal gas development. In the long term, this policy will make the coal industry more profitable, drawing foreign investment to it.

Notwithstanding the fact that the international spending spree on Chinese power has somewhat slowed in the last two years, billions are still pouring in as multinational corporations and international financial institutions scramble for a share of expected future demand and the resulting profits.[6] The World Bank still estimates that the country needs between $15 and $20 billion per year investment in energy.[7] But the Chinese Government actually wants less from foreign investors – under $2 billion annually. However, between 1992 and 1997, China received $5 billion per year for its power sector – more than any other developing country.[8]

As its recent forays into oil and gas development will testify, China is becoming a big player on the global energy scene in its own right, with sufficient funds to invest in large frontier projects with potentially significant climate impacts. In 1997, the China National Petroleum Corporation (CNPC) signed a $9.5 billion contract to develop Uzenskoye, the second-largest oil field in Kazakhstan. In Sudan, CNPC has finished the Muglad Oilfield project, a site that has an annual production capacity of 7.5 million tons, and has also been making deals in Iraq and Venezuela.[9] CNPC has earned the dubious distinction of being identified as the world's ninth-largest 'Kingpin of Carbon'; will it be moving up the climate wreckers' ranking?

# reen

Given that it can meet 80 per cent of its investment requirements by domestic means and that it is not short of foreign transnationals vying for a share of the projected market, the Chinese power sector is hardly out with a begging bowl, in desperate need of scarce development dollars. The Government has more leverage than other recipient countries given that it is both a political and an economic priority for the West to keep China on the path to a market economy.

## Policy of appeasement

Yet, the World Bank, which is supposed to provide finance to projects that would otherwise not garner funds, is squeezing out the private sector in China in its haste to appease the country. Major projects worth billions of dollars have gone ahead recently despite foreign assistance being withdrawn. Nevertheless, the Government remains keen to attract foreign investment.

However, lenders and donors from the OECD countires could and should write environmental objectives into trade and aid policies with China. Co-ordination needs to occur within as well as between governments. For example, the US export credit agency Ex-Im has been one of the biggest fossil-fuel financiers in China since 1997; but OPIC, the other US export credit agency, has not been allowed to fund projects on human-rights grounds. Without international co-ordination any refusal by one country or institution to participate in a project on environmental grounds or due to human-rights concerns will be immediately undermined by another party.

In terms of its total dollar amount, World Bank funding has been exceeded in the last two years by the fossil-fuel investments of some Chinese banks and private lenders from overseas. Nevertheless, the World Bank still plays a dominant role as an 'arranger', bringing together foreign investors, export credit agencies and the Chinese Government to realize energy investments – it remains the most important multilateral institution. In this role, the World Bank could be instrumental in directing new investments away from fossil fuels and towards energy efficiency and renewable energy. Instead, it continues to pour billions into bringing about climate disaster while ignoring the plight of the majority of the Chinese population, still living below the poverty line. ■

**Kate Hampton** is a research intern at The Sustainable Energy and Economy Network (SEEN), a project of the Washington DC-based Institute for Policy Studies (IPS).

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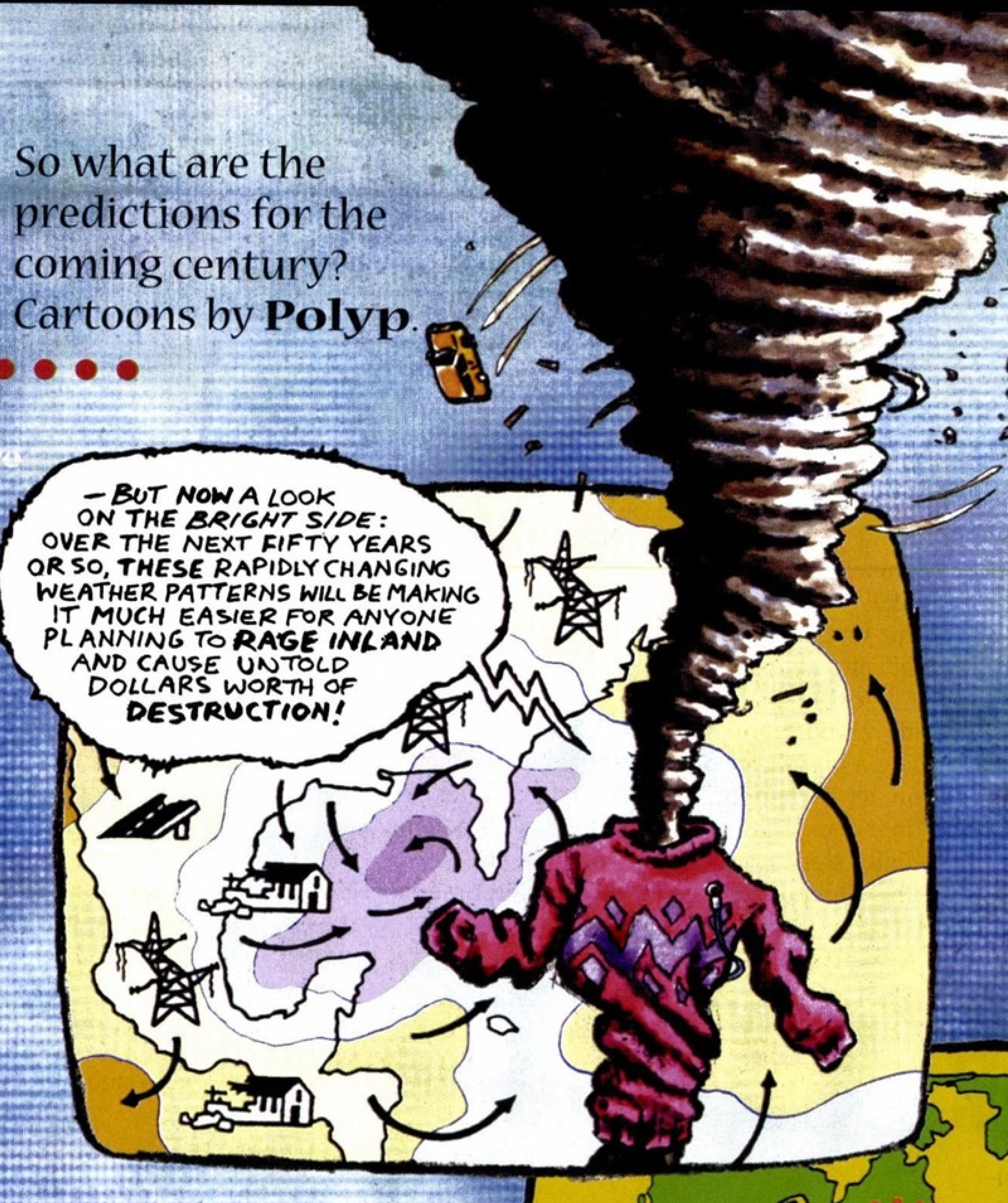
[1] Robert Priddle, Director of the International Energy Agency, in a speech at Qinghua University, Beijing, in 1996.
[2] *Cleaner Coal Combustion in China: the Role of International Aid and Export Credits for Energy Development and Environmental Protection, 1988-1997* (Evans, draft of January 1999).
[3] *Blue Water, Clean Skies* (IBRD, 1997).
[4] *World Bank and the G-7: Still Changing the Earth's Climate for Business* (IPS, 1998).
[5] *Restructure of China's Energy Structure to Offer Huge Commercial Opportunities* – available on the Chinese Government website: www.cei.gov.cn
[6] In 1999, the World Bank approved 19 projects across all sectors in China but total lending fell by $550 million. The reason given was that the inland provinces, long ignored but finally 'benefiting' from Bank investment, have more modest needs.
[7] Memorandum of the President (25 February 1997).
[8] *FDI: International Capital Flows and Links to GHG Emissions in Developing Countries* (Cadmus Group and Hagler Bailly for EPA, 1999).
[9] *Pipeline Gas in North East Asia* (Keun-Wook Paik and Jae-Yong Choi in *RIIA Briefing Paper* number 39, 1998).

**Dirty fingers: kids help out as their parents hunt for waste coal near a quarry.**
**(Top left) Trading by tricycle – a charcoal dealer from Yunnan Province.**

CHRIS STOWERS / PANOS

# ...and now for the weather....

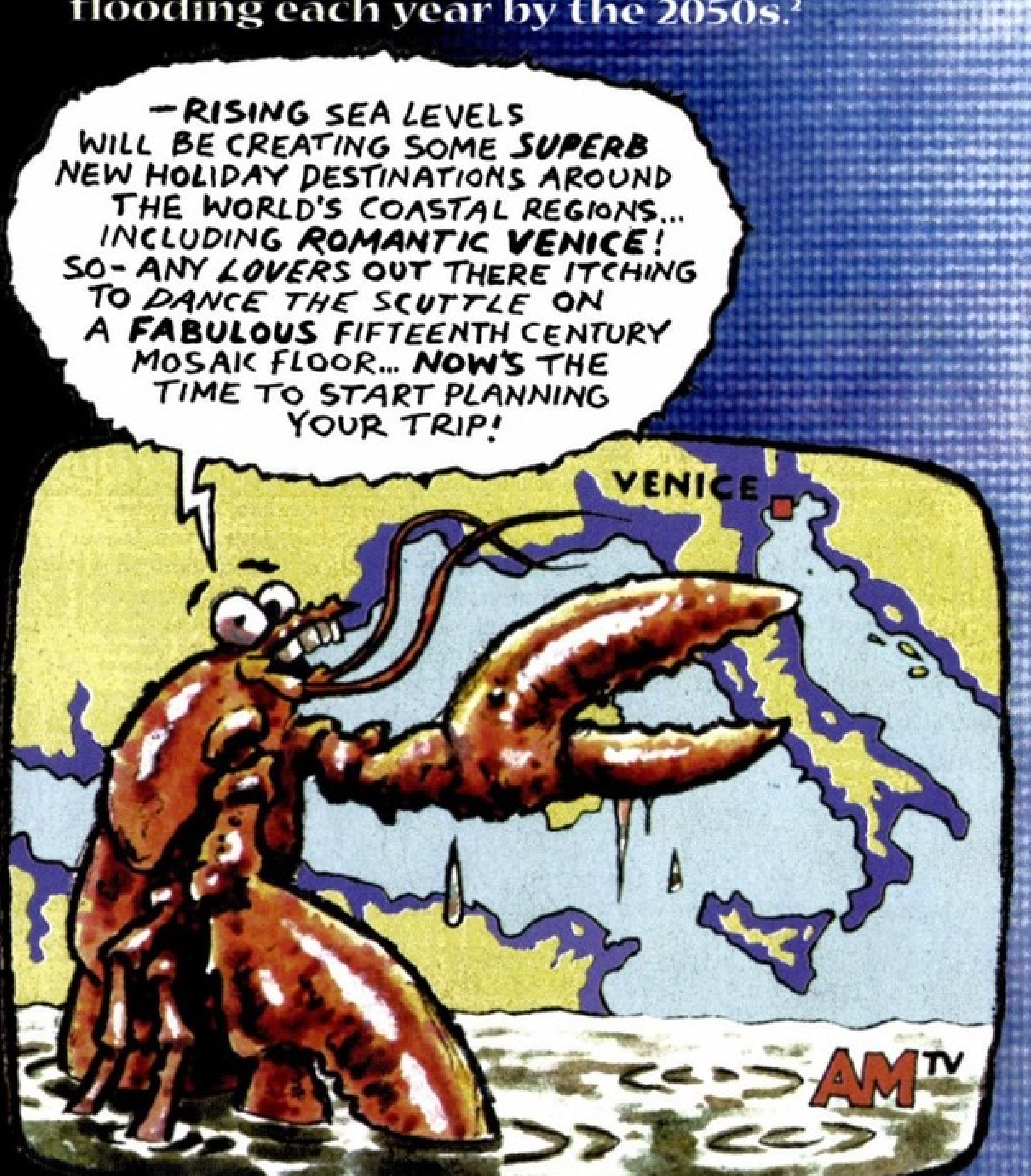
So what are the predictions for the coming century? Cartoons by **Polyp**.



–BUT NOW A LOOK ON THE BRIGHT SIDE: OVER THE NEXT FIFTY YEARS OR SO, THESE RAPIDLY CHANGING WEATHER PATTERNS WILL BE MAKING IT MUCH EASIER FOR ANYONE PLANNING TO RAGE INLAND AND CAUSE UNTOLD DOLLARS WORTH OF DESTRUCTION!

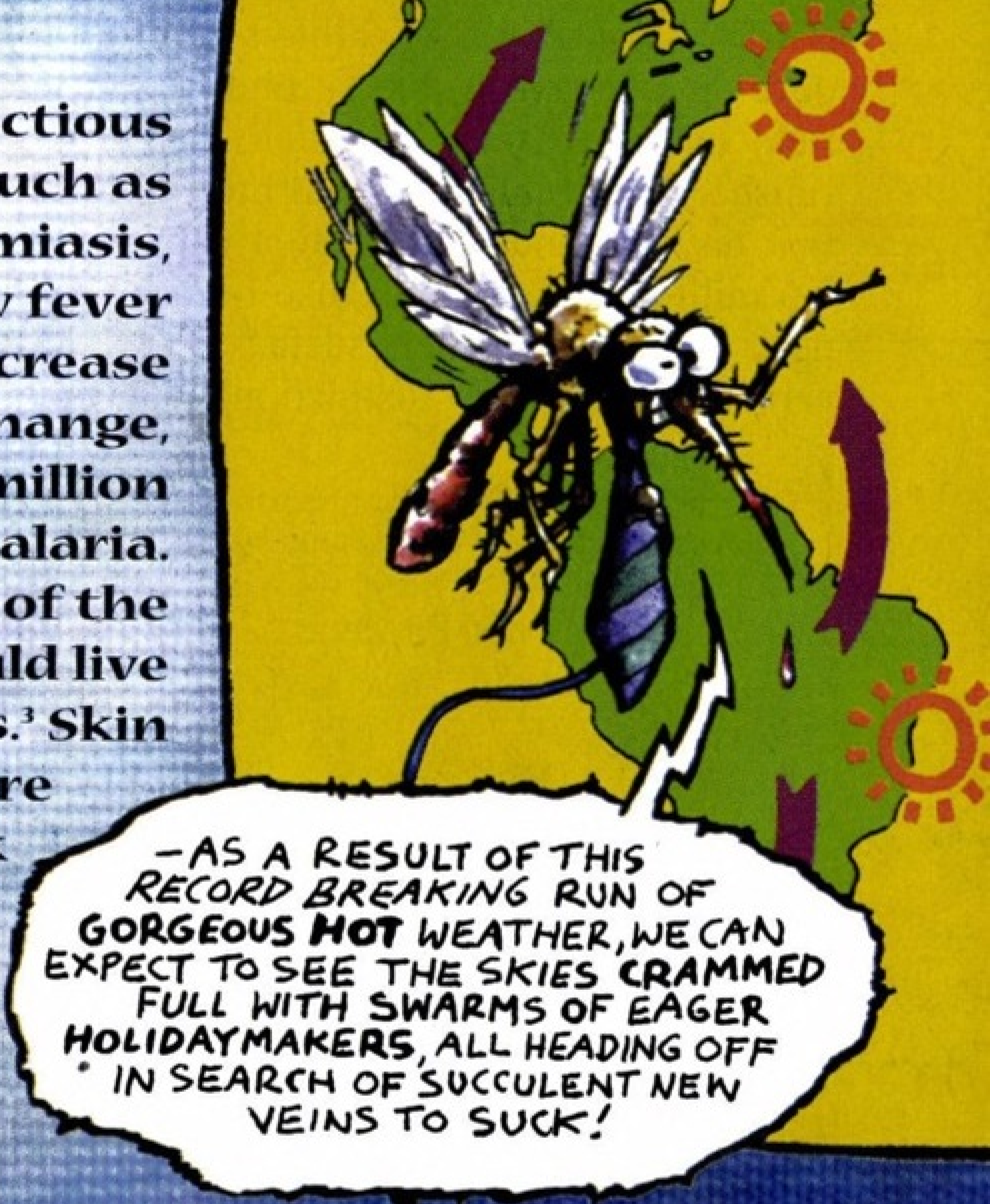
If we carry on as we are, we are heading for many more frequent and intense storms worldwide. Hurricanes, cyclones and floods will increase sharply and El Niño conditions will become permanent.[1]

By 2100 the melting polar ice caps and glaciers are forecast to cause a rise of nearly one metre in sea level – or a six-metre rise if the gigantic ice shelves in the Antarctic collapse.[1] Thousands of lower lying areas around the world would be submerged. Twenty million people would be at risk of coastal flooding each year by the 2050s.[2]



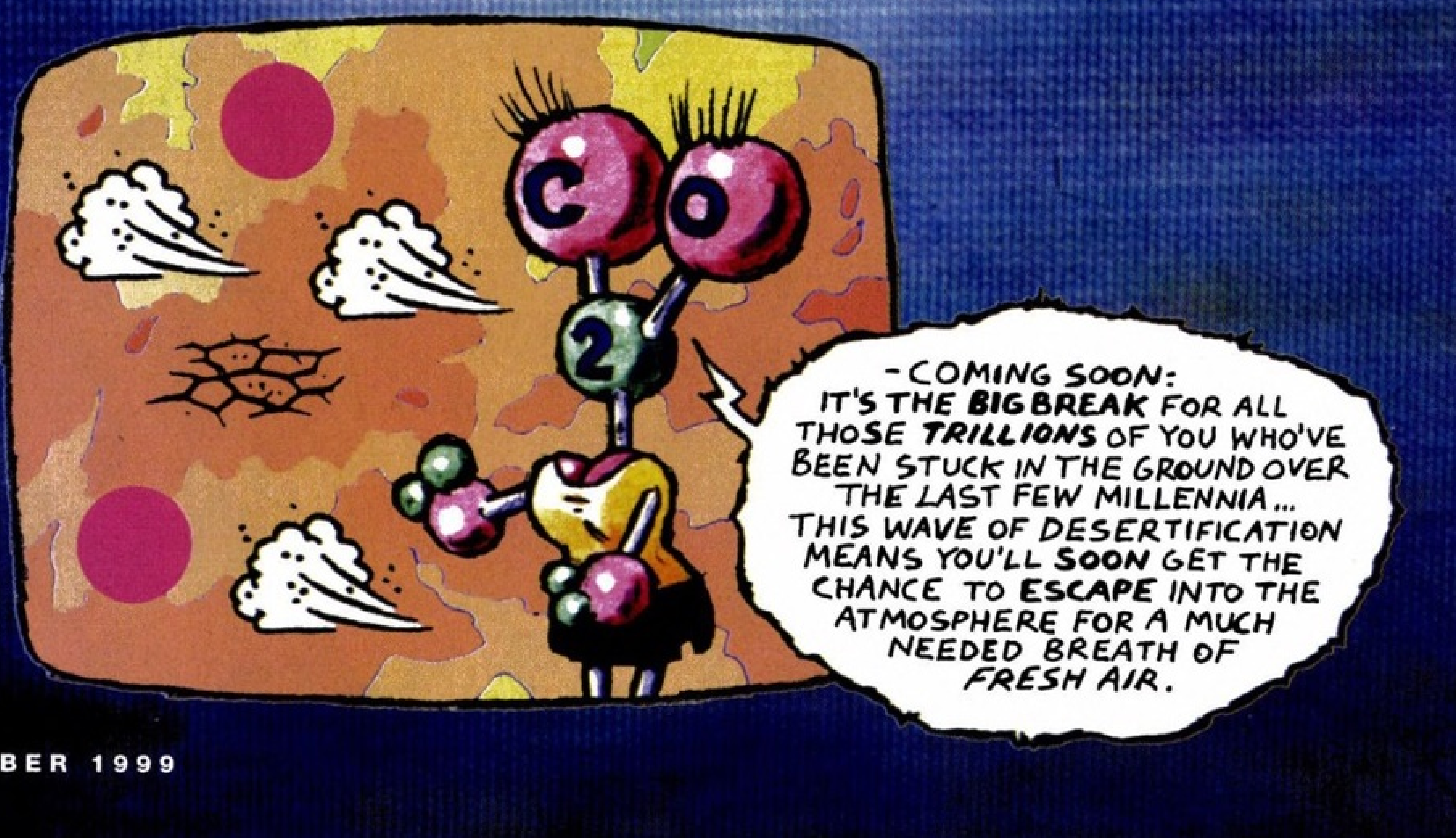
–RISING SEA LEVELS WILL BE CREATING SOME SUPERB NEW HOLIDAY DESTINATIONS AROUND THE WORLD'S COASTAL REGIONS... INCLUDING ROMANTIC VENICE! SO – ANY LOVERS OUT THERE ITCHING TO DANCE THE SCUTTLE ON A FABULOUS FIFTEENTH CENTURY MOSAIC FLOOR... NOW'S THE TIME TO START PLANNING YOUR TRIP!
VENICE
AM TV

The range of infectious tropical diseases such as malaria, schistosomiasis, dengue and yellow fever are predicted to increase due to climate change, causing 50-80 million more cases of malaria. Sixty per cent of the world's people would live in malaria zones.[3] Skin cancer rates are expected to peak around the 2050s, up by as much as 140 per cent in Australia.[4]

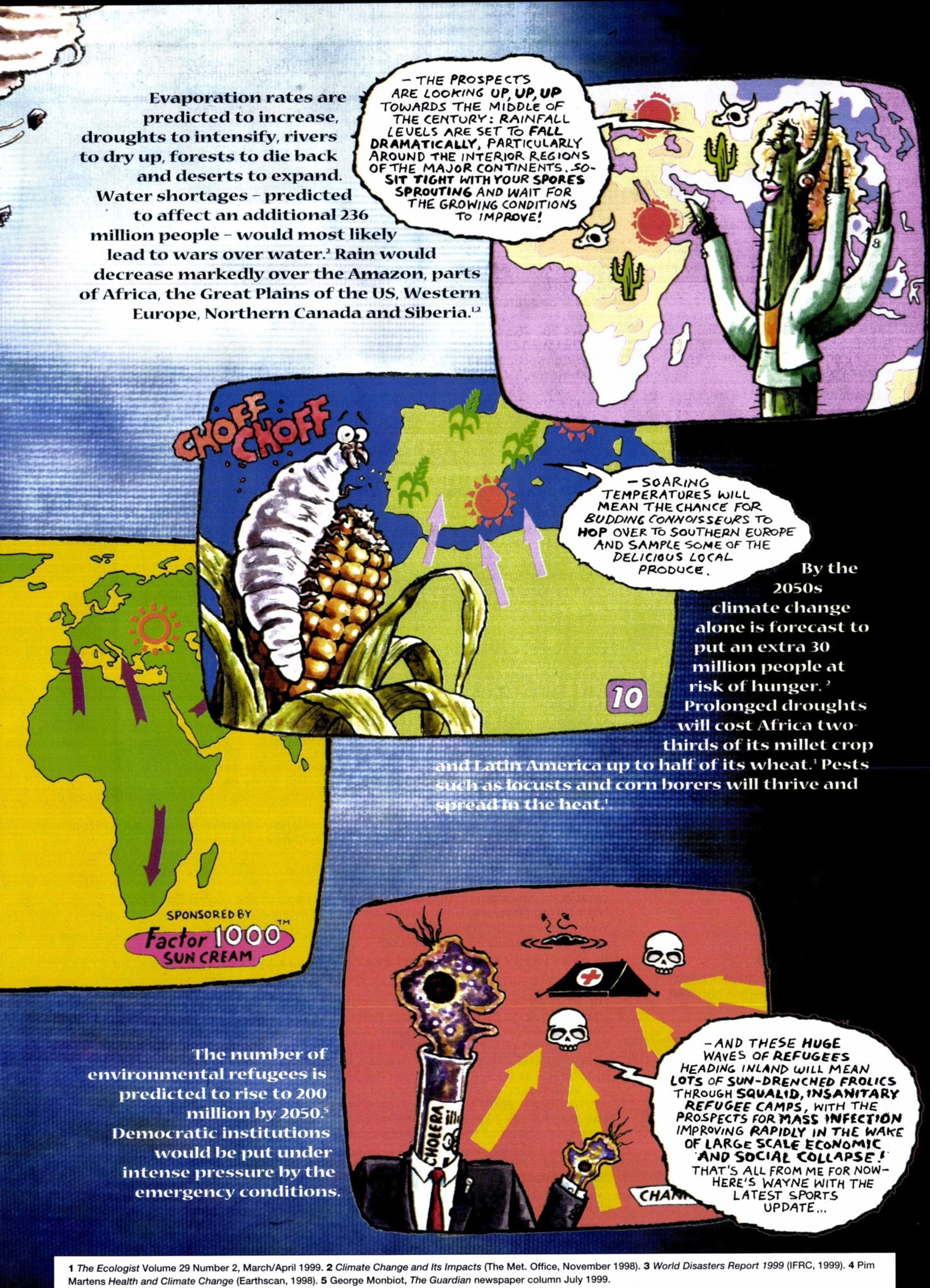


–AS A RESULT OF THIS RECORD BREAKING RUN OF GORGEOUS HOT WEATHER, WE CAN EXPECT TO SEE THE SKIES CRAMMED FULL WITH SWARMS OF EAGER HOLIDAYMAKERS, ALL HEADING OFF IN SEARCH OF SUCCULENT NEW VEINS TO SUCK!

Loss of vegetation could prompt the release of carbon dioxide at a rate of two billion tonnes a year.[2] If areas under permafrost thaw, prehistoric vegetation will be exposed, prompting the release of 450 billion tonnes of carbon dioxide and methane. Siberia is already warming rapidly.[1]



C O 2
–COMING SOON: IT'S THE BIG BREAK FOR ALL THOSE TRILLIONS OF YOU WHO'VE BEEN STUCK IN THE GROUND OVER THE LAST FEW MILLENNIA... THIS WAVE OF DESERTIFICATION MEANS YOU'LL SOON GET THE CHANCE TO ESCAPE INTO THE ATMOSPHERE FOR A MUCH NEEDED BREATH OF FRESH AIR.


– THE PROSPECTS ARE LOOKING UP, UP, UP TOWARDS THE MIDDLE OF THE CENTURY: RAINFALL LEVELS ARE SET TO FALL DRAMATICALLY, PARTICULARLY AROUND THE INTERIOR REGIONS OF THE MAJOR CONTINENTS. SO - SIT TIGHT WITH YOUR SPORES SPROUTING AND WAIT FOR THE GROWING CONDITIONS TO IMPROVE!
CHOFF CHOFF
– SOARING TEMPERATURES WILL MEAN THE CHANCE FOR BUDDING CONNOISSEURS TO HOP OVER TO SOUTHERN EUROPE AND SAMPLE SOME OF THE DELICIOUS LOCAL PRODUCE.
10
SPONSORED BY
Factor 1000™ SUN CREAM
CHOLERA
CHAN
– AND THESE HUGE WAVES OF REFUGEES HEADING INLAND WILL MEAN LOTS OF SUN-DRENCHED FROLICS THROUGH SQUALID, INSANITARY REFUGEE CAMPS, WITH THE PROSPECTS FOR MASS INFECTION IMPROVING RAPIDLY IN THE WAKE OF LARGE SCALE ECONOMIC AND SOCIAL COLLAPSE! THAT'S ALL FROM ME FOR NOW – HERE'S WAYNE WITH THE LATEST SPORTS UPDATE...

Evaporation rates are predicted to increase, droughts to intensify, rivers to dry up, forests to die back and deserts to expand. Water shortages – predicted to affect an additional 236 million people – would most likely lead to wars over water.[2] Rain would decrease markedly over the Amazon, parts of Africa, the Great Plains of the US, Western Europe, Northern Canada and Siberia.[1,2]

By the 2050s climate change alone is forecast to put an extra 30 million people at risk of hunger.[2] Prolonged droughts will cost Africa two-thirds of its millet crop and Latin America up to half of its wheat.[3] Pests such as locusts and corn borers will thrive and spread in the heat.[1]

The number of environmental refugees is predicted to rise to 200 million by 2050.[5] Democratic institutions would be put under intense pressure by the emergency conditions.

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**1** *The Ecologist* Volume 29 Number 2, March/April 1999. **2** *Climate Change and Its Impacts* (The Met. Office, November 1998). **3** *World Disasters Report 1999* (IFRC, 1999). **4** Pim Martens *Health and Climate Change* (Earthscan, 1998). **5** George Monbiot, *The Guardian* newspaper column July 1999.

***The following groups work on issues related to climate change:***

AOTEAROA/NEW ZEALAND

**National Institute of Water and Atmosphere (NIWA)**
PO Box 109-695,
Newmarket, Auckland.
Tel: +64 9 375 2090.
Fax: +64 09 375 2051.
E-mail:
j.salinger@niwa.cri.nz

AUSTRALIA

**Friends of the Earth**
134 Broadway, NSW 2007.
Tel: +61 2 9283 2004.
**Greenpeace**
PO Box 800, Surry Hills, NSW 2010.
Tel: +61 2 9211 4066.

BRITAIN

**Greenpeace UK**
Canonbury Villas, London N1 2PN.
Tel: +44 171 865 8100.
Fax: +44 171 865 8200.
E-mail: info@uk.greenpeace.org
Web: greenpeace.org/-uk/science
**Friends of the Earth UK**
Energy Campaign, 26-28 Underwood Street, London N1 7JQ.
Tel: +44 171 490 1555.
Fax: +44 171 490 0881.
E-mail: padg@foe.co.uk
Web: www.foe.org
**Solar Century**
St John's Studio, Church Road,
Richmond, Surrey TW9 2QA.
Tel: +44 181 948 5322.
Fax: +44 181 948 7410.
E-mail: admin@solarcentury.co.uk
Web: www.solarcentury.co.uk
Seeks to establish a global solar-energy consumer alliance and to broker investments in solar companies by financial institutions.

CANADA

**Greenpeace Canada**
250 Dundas St W, Suite 605, Toronto,
Ont. M5T 2Z5.
Tel: +1 416 597 8408.
Fax: +1 416 597 8422.
Web: www.greenpeacecanada.org
**The Sierra Club**
Suite 412, 1 Nicholas St, Ottawa, Ont.
K1B 7B7.
Tel: +1 888 810 4204.
Fax: +1 613 241 2292.
E-mail: Sierra@web.net
Web: www.sierraclub.ca
Co-ordinates the Canadian Climate Action Network of over a hundred groups.
**The Pembina Institute**
124 O'Conner St, Suite 505, Ottawa,
Ont. K1P 5M9.
Tel: +1 613 235 6288.
Fax: +1 613 235 8118.
Web: www.pembina.org
Specializes in energy and air issues. Their climate solutions website is at www.climatechangesolutions.com

INDIA

**Tarun Bharat Sangh**
Bheekampura Kishori, via Thane ka Gazi,
Alwar 301 002, Rajasthan.
A non-governmental organization assisting Indian farmers on water harvesting and other projects.

STOP OIL GO SOLAR
SAVE THE CLIMATE
GREENPEACE
GREENPEACE

GREENPEACE / BELTRA

UNITED STATES

**Greenpeace USA**
1436 U Street NW, Washington DC
20009.
Tel: +1 202 462 1177.
**US Climate Action Network**
1367 Connecticut Ave, NW, Suite 300,
Washington, DC 20036.
Tel:+1 202 785 8702.
Fax: +1 202 785 8701.
E-mail: cielne@igc.org
Web:
www.climatenetwork.org/USCAN/about.html
The US branch of a worldwide network which works to inform and influence US and international policies.

INTERNATIONAL

**Forest Stewardship Council**
Avenida Hidalgo 502, 68000 Oaxaca,
Mexico.
Web: www.fscoax.org
Promotes better management of forests and certifies timber that comes from sustainable ones.

**Greenpeace International**
Keizersgracht 176, 1016 DW
Amsterdam, The Netherlands.
Tel: +31 20 523 6222.
Fax: +31 20 523 6200. Web:
http://www.greenpeace.org.climate/
Active in pressuring governments and industry to shift from dirty energy to renewables. A good source of documentation on climate change at the poles, coral reefs and carbon budgets.

The **Intergovernmental Panel on Climate Change** can be contacted via
**The IPCC Secretariat**
World Meteorological Organization
Building, 7 bis Avenue de la Paix, CP
2300, CH-211 Geneva 2, Switzerland.
Tel: +41 22 730 8208.
Fax: +41 22 730 8025.
E-mail: ipcc_sec@gateway.wmo.ch
Web: www.ipcc.ch

The **EarthAction Network** consists of citizen groups in more than 150 countries and campaigns on a wide range of environmental issues.
In Britain contact: EarthAction,
17 The Green, Wye, Kent TN25 5AJ.
Tel: +44 1233 813 796.
Fax: +44 1233 813 795.
E-mail: wye@earthaction.org.uk
In the US contact: EarthAction,
30 Cottage Street, Amherst, MA 01002.
Tel:+1 413 549 8118.
Fax: +1 413 549 0544.
E-mail: amherst@earthaction.org
Web: www.earthaction.org

See also **US Climate Action Network** above.

* * *

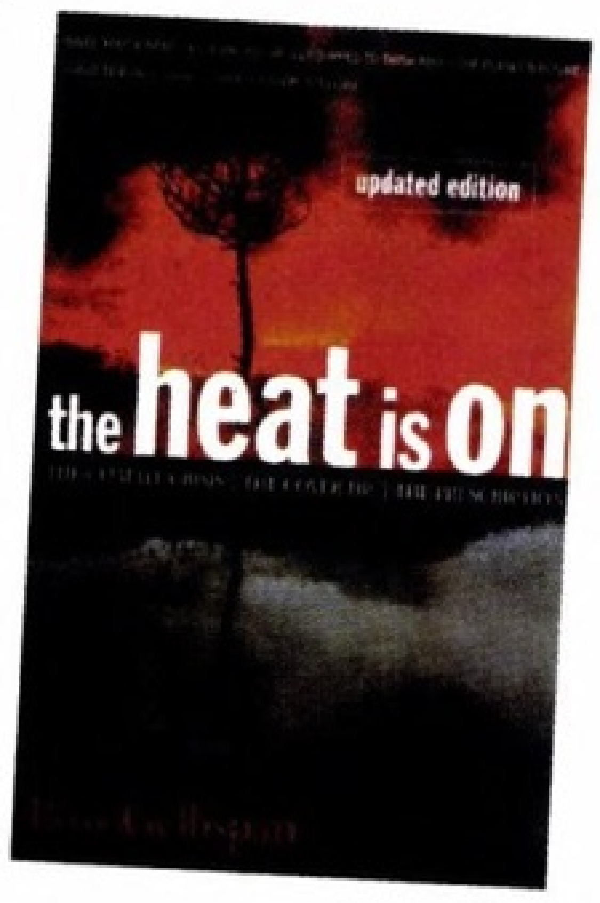
WEB RESOURCES

Just a handful of the wide variety of climate-related sites on the net – in addition to the ones mentioned above.
**www.seen.org/** – The Sustainable Energy and Economy Network's exhaustive reports on the World Bank's funding of fossil-fuel projects.
**www.heatisonline.org** – Drawing on Ross Gelbspan's book (see *Worth Reading* below), with up-to-the-minute updates on extreme weather worldwide. Excellent.
**www.met-office.gov.uk/sec5/sec5pg1.html** – The home page of the British Hadley Centre for Climate Prediction and Research. Authoritative information on the future impacts of climate change.
**www.cru.uea.ac.uk/link** – A massive warren of original research, news stories from international sources and links created by the Climatic Research Unit of the University of East Anglia.
**www.wmo.ch** – Home page of the United Nations' World Meteorological Organization.
**coral.aoml.noaa.gov/icri/gcrma.html** – Home page of the Global Coral Reef Monitoring Network, the research arm of the International Coral Reef Initiative.
**www2.open.ac.uk/Ecology/J_Baker/JBtxt.htm** – Home page of the Declining Amphibian Populations Task Force/

* * *

WORTH READING

For an informed and impassioned account of the politics and the science of climate change, look no further than **Ross Gelbspan's** *The Heat is On* (Perseus Books, 1998). *The Carbon* War by **Jeremy Leggett** (Allen Lane/The Penguin Press, 1999) is a blow-by-blow account of the machinations of the fossil-fuel giants. Contributor **David Keys'** *Catastrophe* (Century, 1999) provides a fascinating reconstruction of how climatic disaster in the Dark Ages changed the political face of the world. *Factor Four* by **Ernst von Weizsäcker**, **Amory B Lovins** and **L Hunter Lovins** (Earthscan, 1998) is jam-packed with reader-friendly information on energy-efficient technologies.
The March/April 1999 special edition of the journal *The Ecologist* covers all aspects of the climate crisis and the International Federation of Red Cross and Red Crescent Societies' 1999 edition of *World Disasters Report* offers an in-depth analysis of last year's natural catastrophes. Greenpeace's booklet *Answers from the Ice Edge* provides a good insight into how all-embracing climate change can be – in the Arctic in this case. Finally an excellent teaching pack from Canada, including a video on renewable energy options – *Climate Change: Awareness and Action* by **Dave Mussell**, **Juleta Severson-Baker** and **Tracey Diggins** (Pembina Institute for Appropriate Development, 1999).



# The **NI** Interview

# Marzieh

**Christine Aziz** finds one of Iran's most famous artists in her surprising exile in downtown Baghdad.

MARZIEH is Iran's singing legend. For over 50 years she has sung to the world's kings, queens and presidents, not to mention a Shah or two. To a foreigner her fame in her own country cannot be imagined. Perhaps Frank Sinatra's renown in America comes closest. (She once had dinner with Frank, by the way.)

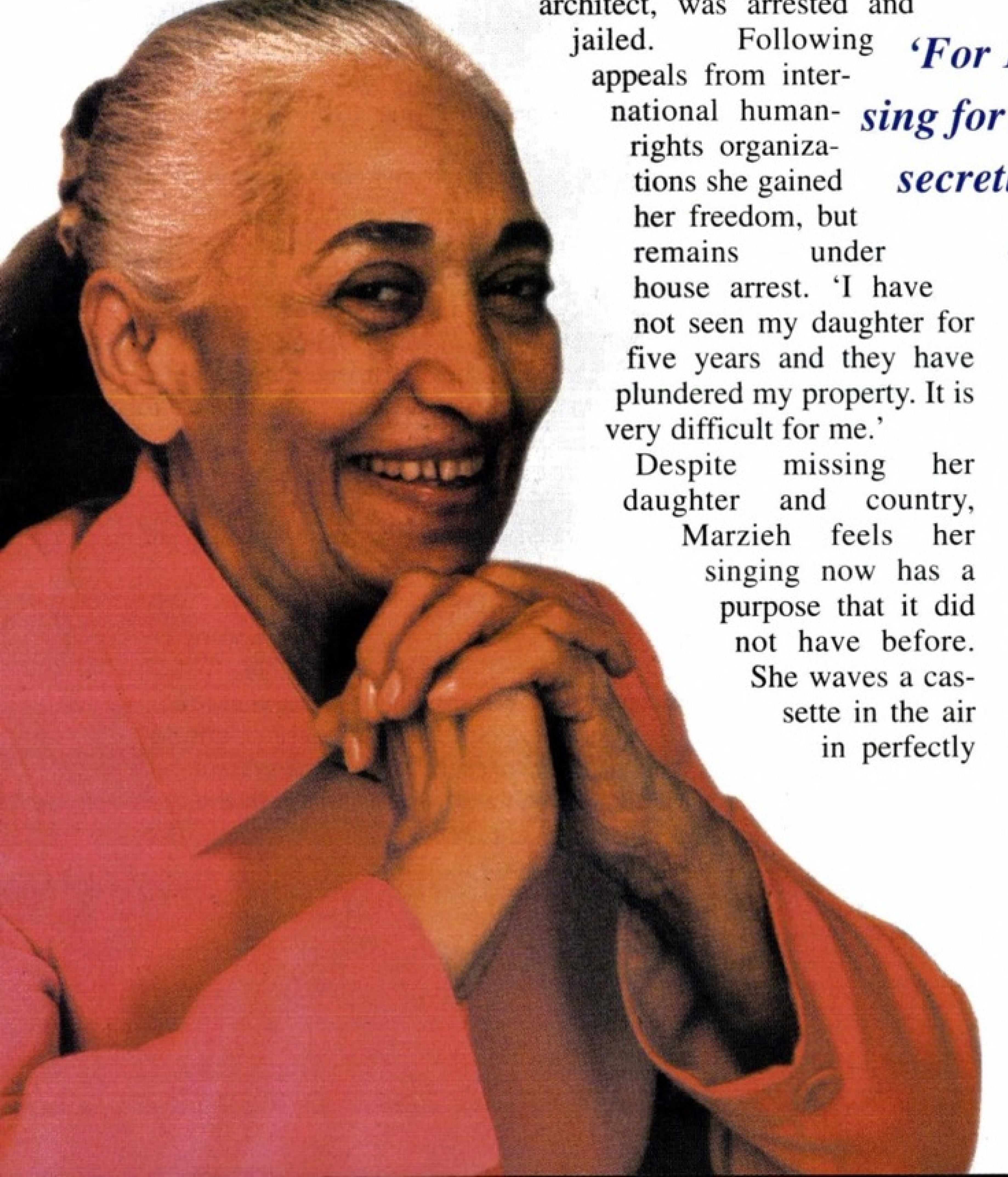
Yet here she is, the great Marzieh, now aged 74, sitting us down to a sumptuous Iranian meal, cooked by herself in her huge flat in the middle of Baghdad. The apartment is part of a large complex of buildings in the centre of Baghdad which also includes the administrative headquarters of the National Council of Resistance for Iran (NCRI), successor to the leftist People's Mujahedin which helped overthrow Shah Mohammed Reza Pahlevi in 1979. The NCRI now forms a government in exile, opposed to the Shah's successors, and has offices around the world.

In 1994 Marzieh flew to Paris, where she has a residence, to begin a series of recordings on her life put together by the BBC World Service and while there met with members of the Mujahedin. Greatly impressed by the organization's President, Maryam Rajavi, she defected from Iran and declared her support for the Mujahedin. Two years later she had moved to Baghdad, which is also home to the NCRI's military wing The National Liberation Army of Iran. The move was a propaganda coup for the Mujahedin and a homecoming for Marzieh.

'When the NCRI first asked me to join them, and leave Iran, I said "no" and walked away. I had my daughter in Iran and I love my country deeply. I stayed at my house in Paris before returning to Iran and I was just moving around my flower pots and I thought, "I am going to join (the NCRI)." I returned to Iran to sort out my affairs and then came back to devote my life to the movement.'

Immediately after she left Iran, her daughter Hengameh Amini, an architect, was arrested and jailed. Following appeals from international human-rights organizations she gained her freedom, but remains under house arrest. 'I have not seen my daughter for five years and they have plundered my property. It is very difficult for me.'

Despite missing her daughter and country, Marzieh feels her singing now has a purpose that it did not have before. She waves a cassette in the air in perfectly varnished fingers. Later, she plays it in her purpose-built studio and it shocks. It is Marzieh's recording of Islam's call to prayers which is heard throughout the day in Muslim countries. It is a profoundly moving version and is the first ever such recording by a woman. It is transmitted everyday across Iran via Mujahedin transmitters based in Iraq. 'It makes the mullahs mad,' she says gleefully. 'But there is nothing they can do about it. There is nothing in the Koran which says the call to prayers cannot be sung by a woman.'


JENNY MATTHEWS

Marzieh is a tiny woman, operating on high octane energy and vibrant in shocking pink. She accompanies each word with a gesture. Her flat is just as surprising as she is. Resistance members are known for their fastidious simplicity; the women all wear headscarfs and shun make-up and their living quarters are spartan. Marzieh refuses to hide her long grey hair. And then there are the chandeliers, the wall-to-wall red carpeting and the elegant modern furniture scattered throughout her ten-room flat. Every morning she goes jogging through Baghdad's streets and also plays tennis at a nearby hotel.

Marzieh was born in 1926 into a distinguished family – her father was a Muslim cleric, her mother from an artistic family. She was educated at a time when families did not send their daughters to school and she was always encouraged to sing. She spent many years training under the masters of Persian music before she formally began to sing. 'When I was four years old I knew I had a beautiful voice. But when I began to sing it was extremely difficult to become a singer, especially for a woman. Several masters of music had to certify the voice as well as the artist's grasp of their theory of music.'

Marzieh was at the height of her fame in 1979 when the Shah was deposed and Ayatollah Khomeini ended his exile in Paris, flew into Tehran and introduced *velayat-e-faqih* – the absolute supremacy of Islamic clergy – the mullahs. The new Islamic Republic promptly banned 'improper' music and female singers were banned from solo public performances. 'It destroyed me mentally and emotionally,' she says, eyes flashing. Despite the ban Marzieh continued to live in Iran with occasional visits to Europe. 'It was difficult, the idea of leaving,' she said. 'But if I couldn't sing for the people, why should I sing at all? So for 15 years I did not sing for anyone but worked secretly with a group of musicians. I used to go to the countryside and sing to the mountains, the birds, for the water, for the hills, just to avoid my voice reaching one mullah. They said music was only for the wicked. I was becoming a pale autumn leaf. If I had not come to Paris and met them what would have happened to me? What would a nightingale do if you put her in a cage? She would die in 24 hours.'

> ***'For 15 years I did not sing for anyone but worked secretly with a group of musicians '***

When Marzieh announced her defection, the current President Mohammed Khatami is reported to have said: 'We let the canary out of the cage.'

With a repertoire of over a thousand songs, many of them verse set to music, Marzieh's conversation is peppered with quotes from Persian poetry. When asked why she joined the Mujahedin, she quotes the thirteenth-century Persian poet, Rumi. 'I am looking for that which cannot be found/ For I am fed up with beasts and ogres/ And I yearn for a human being.' ■

**Christine Aziz** is a UK-based freelance writer and contributor to several publications including *The Guardian*, *The Scotsman* and *Marie Claire*.

# Reviews

## music

### Like The Milk

by **Mr McFall's Chamber**
*(Discipline Global Mobile DGM 9809 CD)*

### Harry's Gone Fishing

by **Leon Rosselson**
(Fuse Records CFCD/CFC 007 CD/MC)

The application of classical methods in the pursuit of popular appeal in music is not a new technique. Indeed, there's a much larger merging or crossover between the two areas than some purists might admit. But it rarely finds a better niche than with the magnificently weird Scotland-based Mr McFall's Chamber who gained their name from an error in a local newspaper. **Like The Milk** contains the broad spread with which the eight-strong chamber orchestra, including percussion and bass guitar, have made their name. Smooth and elegant arrangements of tangos from Piazzola and galliards from John Dowland are balanced by covers of songs from Janis Joplin and Elvis Costello. A blistering version of Robert Burns' text on 'Sic a Parcel of Rogues' commits the band to Scotland, while Costello's 'Shipbuilding' and Kay Sutcliffe's 'Coal Not Dole' are heartrending calls for an inclusive social fabric.

The delight of the album is its counterpoints: the intentionally rough edges of Dave Brady's vocals sit against the lean precision of the band, who, make no mistake, can really play. Its members have a clutch of top-flight classical prizes, and the band were entrusted by Californian composer John Adams with the British première of his *Alleged Dances* last year. Although McFall's have played everything from Arvo Pärt to the Sex Pistols in other arenas, a certain talking point on **Like The Milk** will be their faithful rendition of Jimi Hendrix's 'Little Wing'. The Kronos Quartet and Nigel Kennedy have both tackled Hendrix's flamboyant style in the past, but this stands apart from the blissed-out madness of 'Purple Haze'. Quietly and thoughtfully worked out, it quivers with a sense of space and vitality that owes something in its translation to Gaelic ballads. Strange, but very lovely.

**Politics** ☆☆☆☆
**Entertainment** ☆☆☆☆

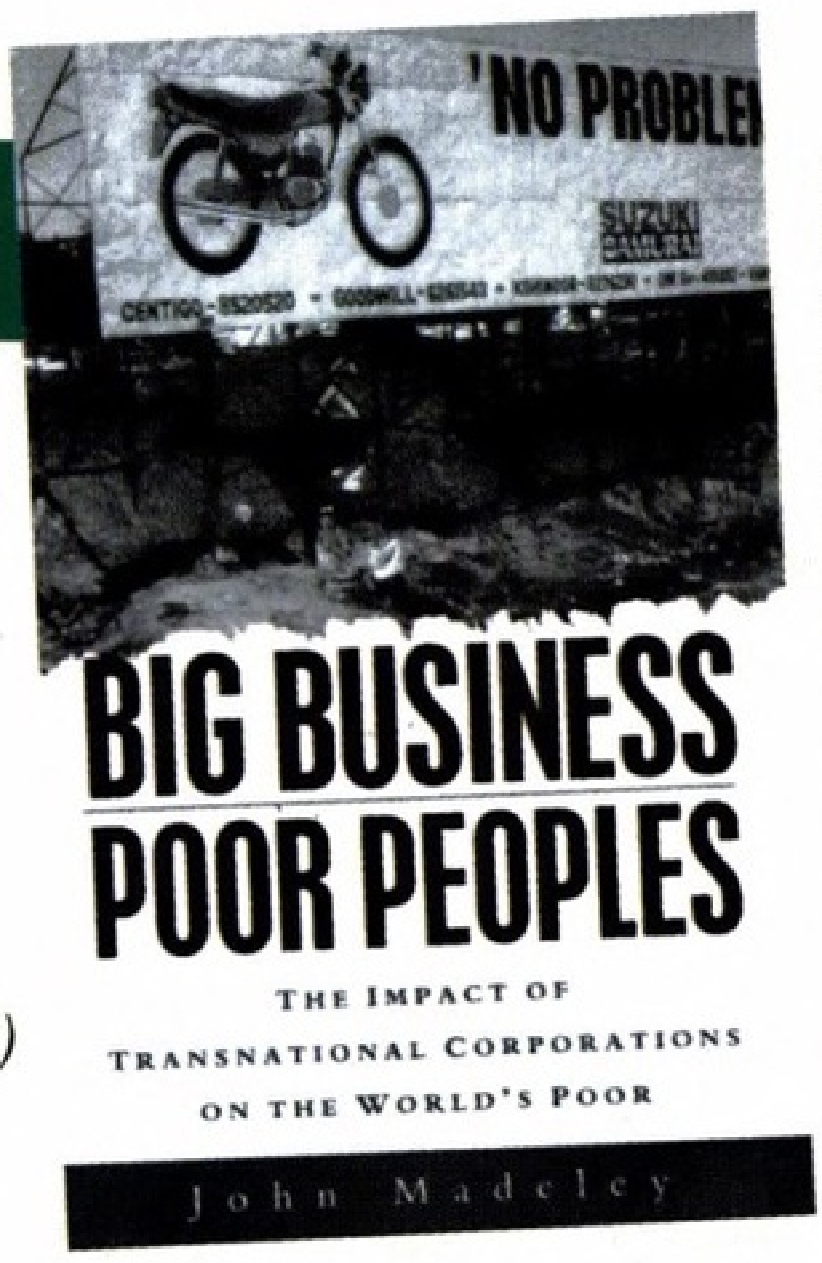
## books

### Big Business, Poor Peoples: The Impact of Transnational Corporations on the World's Poor

by **John Madeley**
*(Zed Books, ISBN 1 85649 672 4)*

### The Lugano Report: On Preserving Capitalism in the Twenty-first Century

by **Susan George**
*(Pluto Press, ISBN 0 7453 1537 2)*


'NO PROBLE
SUZUKI
BIG BUSINESS
POOR PEOPLES
THE IMPACT OF TRANSNATIONAL CORPORATIONS ON THE WORLD'S POOR
John Madeley

British Prime Minister Tony Blair remarked recently, à propos of globalization, that it 'seems to be the way things are going', implying that the process was a natural, beneficent one and it would be foolish and futile for individual governments to resist the tide. This complacent view – one shared by far too many politicians – is challenged by John Madeley's timely and cogent examination of transnational corporations, the engines that drive globalization.

Madeley's book, **Big Business, Poor Peoples**, tackles the claims made by supporters of globalization that there is no alternative to its unvarying prescription of deregulation, privatization, welfare cuts and 'free trade'. Madeley traces the effects of this juggernaut on the people to whom it claims to be bringing prosperity: the world's poor. He shows how, in sector after sector, transnational corporations plunder resources and despoil eco-systems and how their entry into a nation's economy fuels a destructive 'race to the bottom' in which governments 'abandon their commitment to local communities and sustainable development in their scramble to attract foreign investment'. From Shell in Nigeria to Mitsubishi in the Philippines; in logging, fishing, manufacturing, mining, globalization is revealed as a rapacious sham, a front behind which profits are expatriated and corporate neo-colonialism replaces national sovereignty and local decision-making.

In the concluding chapter of his readable and persuasive book, Madeley calls for a locally organized global network of producers, consumers, communities and shareholders to rein in this behemoth and prevent the inevitable outcome of neo-liberal policies; economic, ecological and social meltdown.

**Politics** ☆☆☆☆☆
**Entertainment** ☆☆☆

In **The Lugano Report**, Susan George approaches this doomsday scenario from a novel direction. Assuming that the managers of globalization are well aware of the catastrophic consequences of their policies, she imagines that a secret Working Party is convened to consider the crisis and suggest ways in which capitalism – and the beneficiaries of the globalization swindle – can be preserved in the next century. The opening chapters reveal the timebomb created by the IMF, World Bank, World Trade Organization and all the other embryonic elements of a 'world government' designed to protect capitalism against people. Forced by sheer weight of evidence to accept the unsustainability of global capitalism in its present form, the report's authors pursue their argument to its logical conclusion: if global capitalism is unable to meet the needs of the projected 8-12 billion world population, then steps need to be taken – in secret, of course – to ensure that the population does not reach 8-12 billion. By happy chance (or perhaps not), this Grand Population Reduction Scheme can be set in motion using the very levers and tools of control of globalization. Thus, for instance, higher death rates in countries subject to structural adjustment are a welcome contribution to the reduction of the population and the international financial institutions are to be vital collaborators in this war of a system against humanity.

This is grim and terrifying stuff indeed; all the more so in the light of its presentation as an inevitable and desirable cure for the endemic ills of the global economy. Susan George's intimate knowledge of the bureaucratic mindset means that the book works superbly as a satire – following the example of Swift's *Modest Proposal* – but her greater aim is to show that there are viable alternatives to this nightmare. The answers to the baleful questions posed by the Working Party lie, as always, in places they choose not to look: the removal of sovereignty from corporate hands and a resolve to build on the network of local organizations outlined by John Madeley to create a 'co-operative globalization' in which the world economy is founded on healthier, more equitable societies. We can still build a system in the service of people rather than sacrifice untold millions in the preservation of the system. That is the challenge that awaits us in the twenty-first century.

**Politics** ☆☆☆☆☆
**Entertainment** ☆☆☆☆

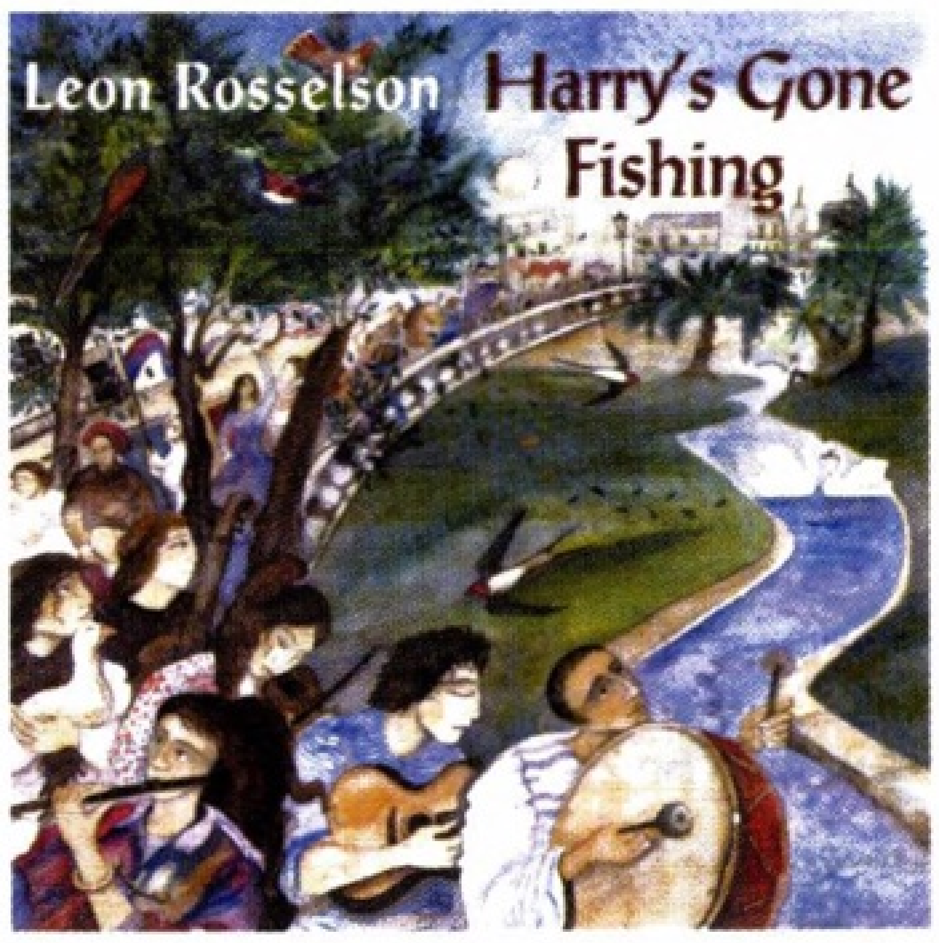
PW

Martin Carthy, Steeleye Span founder and half of the peerless Waterstone-Carthy duo, is a link of sorts between the Scots contingent and the unique Leon Rosselson. Carthy worked with the aforementioned Brady in the 1960s, but he crops up with a real presence, as a second guitar and voice, on **Harry's Gone Fishing**. A veteran of the folk-revival scene, Rosselson's singular songs are inspired by an English tradition and provoked by a sharp sense of protest. The Harry of the album's title is the personification of a mythic retaliation against injustice: one thinks of the Chartists and early trade-union songs; there's even a most rousing version of 'You Noble Diggers All' to drive the point home.

For the other ten songs that make up **Harry's Gone Fishing**, Rosselson turns his attention to mercenaries, to Cuba (less '*viva* the revolution', more, 'where is the revolution?'), to American gun law and the country's specious role as self-appointed protector of freedom and democracy. The songs may be gentle in their presentation, but Rosselson fairly burns with a righteous indignation. These are not, as far as the music industry's market place is concerned, sexy subjects: as Rosselson himself sings on 'Encore': *I've been writing songs for over 35 years but I don't seem to have got very far/I've never been nominated for a Nobel prize and I can't say I'm a superstar*. Maybe not, but voices in the wilderness should never be dismissed.

**Politics** ☆☆☆☆☆
**Entertainment** ☆☆☆☆ LG

**Harry's Gone Fishing** is available by mail order from: Fuse Records, 28 Park Chase, Wembley Park, Middlesex, HA9 8EH, UK.



**STAR** RATING

| | |
|---|---|
| **Excellent** | ☆☆☆☆☆ |
| **Very good** | ☆☆☆☆ |
| **Good** | ☆☆☆ |
| **Fair** | ☆☆ |
| **Poor** | ☆ |

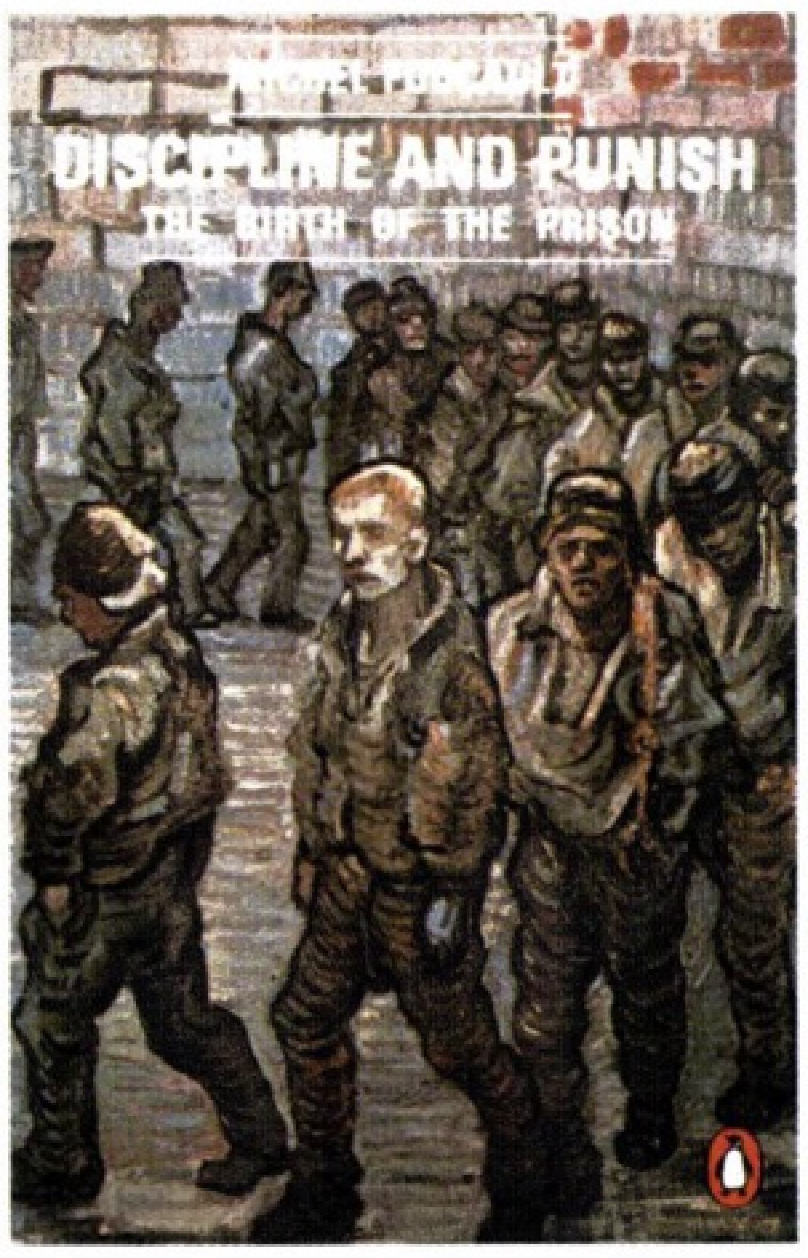
## THE CLASSIC

# Discipline and Punish

### ... being the book that unpacked authority and its mechanisms.

THESE days, the fashion for postmodernism is wearing pretty thin. Too many counter-intuitive claims have been made in its name, too many hostages have been offered up to its political misfortunes. To recap: the intellectual world of the late 1970s, if not exactly ablaze, at least tingled pleasantly thanks to translations of Michel Foucault and Jacques Derrida. Come the 1980s and Foucault dies tragically of AIDS while Jacques Derrida's leading exponent (Paul de Man) turns out to have a hidden past as a nazi-sympathizer.

So far we are still in the realms of Greek tragedy – the farce is yet to come. In 1991 Jean Baudrillard, heir to the postmodern crown, writes a series of articles for *Libération* announcing that 'the Gulf War is not taking place'. The argument is silly, incredibly silly, but its postmodern credentials are impeccable: human knowledge of a world transcending discourse is a fiction, therefore human knowledge of a war that takes place beyond the bounds of discourse must also be a fiction.



More recently two academics, Alan Sokal and Jean Bricmont, who clearly have too much time on their hands, decide to write a hoax article containing as many humorously outrageous postmodernisms as possible, but dressed up in appropriately serious language, with all the right references. The prominent American journal *Social Text* accepts it gladly and publishes the piece as another important contribution to the discourse. The editors cringe when the hoax is revealed. Around the world eyebrows are raised, questions are asked.

But while postmodernism has lost a great deal of its lustre as an intellectual fashion, some of the individual works which were central to its emergence retain a freshness and strength. Foucault's **Discipline and Punish** stands out as one example, but it does so precisely because of the claims that it makes about the world and about broader social significance of the birth of the prison.

Foucault's argument begins with the spectacle of the scaffold and the public execution of the offender. But during the second half of the eighteenth century, humanist abhorrence of the infliction of pain was to triumph and there followed calls for penal reform.

Whereas the medieval dungeon obscured visibility in both directions, the modern prison would control subjects, render them cautious, force them to internalize the discipline and become, in effect, their own jailors. Isolation and surveillance were to create an authoritarian utopia, forming good little individuals ready to take up their places in society.

Humanist schemes such as Jeremy Bentham's 'Panopticon' promised to end criminality and provide surefire ways of 'grinding rogues good', but they were not acted upon. For example, in the modern prison there is no attempt to instill an automatic association between particular crimes and particular punishments. Incarceration has become the common answer to everything, varying in length but not greatly in character. Prison discipline has been drawn from a collection of diverse tactics rather than a single overarching rationality. It was through the disciplines of the barracks, the workshop, the schoolroom and the hospital, that the modern prison system became possible.

One important consequence of this fragmentary logic is that there is no serious possibility of the prison system reducing overall levels of criminality. Punishment is not geared towards the production of Bentham's new model citizens, it tends instead to function as a school for crime, taking in offenders and grinding out delinquents. Failure was built in from the start.

But here Foucault asks an important question: what is served by this failure? He answers by pointing to the production of a seemingly marginal, but supervised milieu of criminals. Such delinquency allows illegality to be localized and it allows the criminal group to be used by the justice system in order to survey the entire social field. Criminality becomes an instrument of power.

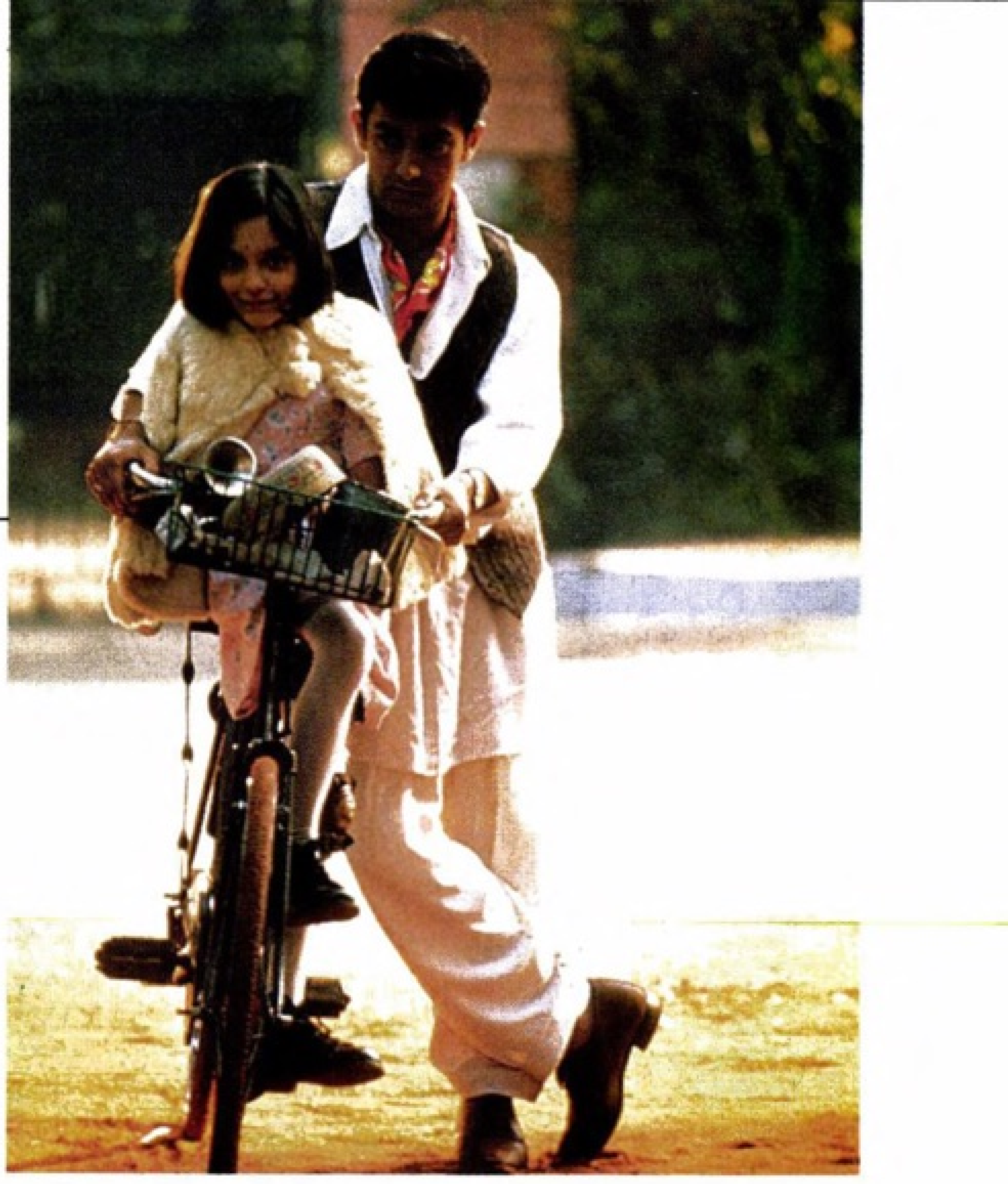
In addition, crime becomes gauged by degrees of anomaly and normality. The disciplinary society – the school, the court, the asylum and the prison – is set in a struggle against all forms of anomaly. Prison grinds society uniform.

Foucault's own view of his genealogy of the prison and other disciplinary mechanisms was that they were to be regarded as elaborate fictions. This is not a view that intrudes too much into the text itself; there are no paragraphs ending 'this is, of course, a fiction'. What we are left with is an interesting but debatable framework, coupled with a searing criticism of the mechanisms of discipline and punishment. This may well ensure the book's continuing success long after postmodernism has finally gone the way of all fashions. ■

**Tony Milligan**

**Michel Foucault**'s *Discipline and Punish, The Birth of the Prison* is published by Penguin Books, (ISBN 0-14-013722-X).

# Reviews



**Lenny with her hero, the 'Ice Candy Man', whose heart freezes when his sisters are butchered.**

*film*

## Earth

directed by **Deepa Mehta**

Eight-year-old Lenny (Maia Sethna), daughter of a wealthy Parsee couple in Lahore deliberately drops a plate to watch it smash to the floor. When her mother comes running to see what all the fuss is about, the child turns to her to enquire: 'Mummy, can one break a country?'

Writer and director Deepa Mehta's follow-up to the passionate *Fire* is a brilliant and painfully evocative recreation of the 1947 partition of India and the barbarism it unleashed between Sikh, Hindu and Muslim. Based on Bapsi Sidhwa's autobiographical *Cracking India* (Sidhwa's narration bookends the film), the dreadful ramifications of international and national political decisions on the lives of ordinary people are captured by focusing on the small group of individuals with whom 'Lenny-Baby' shares her life. Her beautiful *ayah* Shanta (*Fire*'s luminous Nandita Das) is the glowing hub of a multi-faith gaggle of young men who playfully vie for her attention. But the holocaust which grips the splintered subcontinent is tragically mirrored in this once loving network of friends.

The vibrant scarlets, oranges and yellows of twirling kites and the dusty golden glow of sunlight streaming throughout Lenny's household later blend into a citywide wash of earth browns and clays as hatred, fear and the desire for revenge grip people's souls. It is personified in Lenny's hero the 'Ice Candy Man', a Muslim charmer called Dil Navez whose heart freezes when his sisters are butchered.

**Earth** does not shy from depicting the obscenities carried out in the name of religion: early episodes of Bollywood frothiness – there are two romantic duets – rightly jar with the violence to come. The entrance of the steam train from Gurdaspur into Lahore railway station, 12 hours late, amid rumours of a massacre is reminiscent of other trains making similar grisly journeys across Europe only a few years earlier. That this train is, of course, a feat of British engineering filled with the slain is a pertinent comment on colonial policy.

Mehta's perspective from Canada, where she now lives, seems to enable her to express an all-encompassing compassion for everyone caught up in the fury. Any ire she might have is reserved for the bureaucrats and politicians 'playing God under the ceiling fans of Lahore Hotel, distributing Indian cities like packs of cards' while the nation goes to war with itself. Over a million people were killed. Seven million Muslims and five million Hindus and Sikhs were uprooted from their homes.

It is only when individuals such as the gentle Muslim Hasan (Rahul Khama) recognize a love greater than religious differences – he hides a Sikh family in his home, and is prepared to convert to Hinduism for the love of Shanta – that we see any sign of hope.

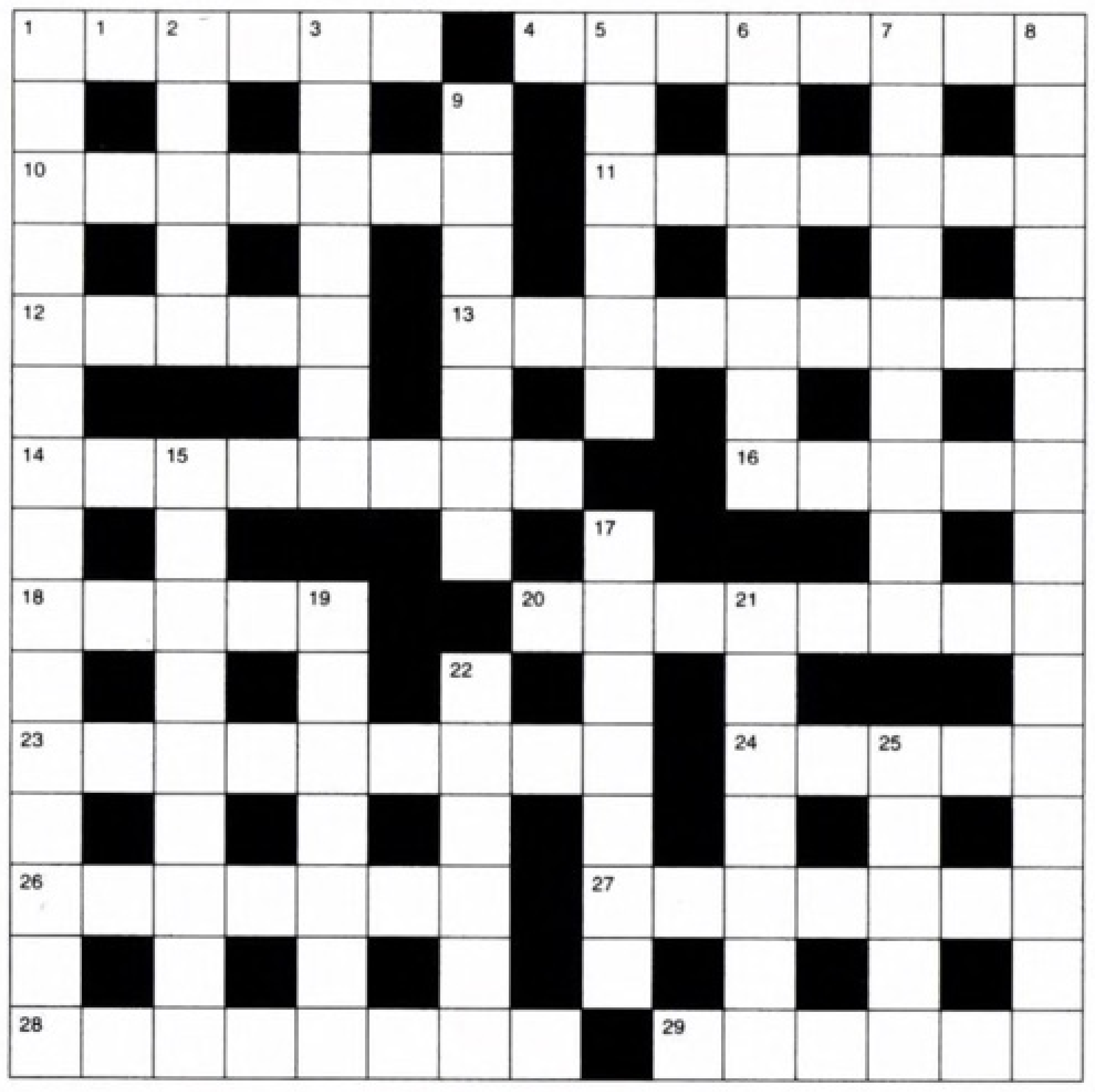
This film is a real tour de force: political, emotional and utterly gripping.

**Politics** ☆☆☆☆☆
**Entertainment** ☆☆☆☆☆ CvR

Reviewers: **Louise Gray**, **Peter Whitaker**, **Catherine von Ruhland**.
Reviews editor: **Vanessa Baird**

# The **NI** Crossword

**39** by **Axe**



## CRYPTIC

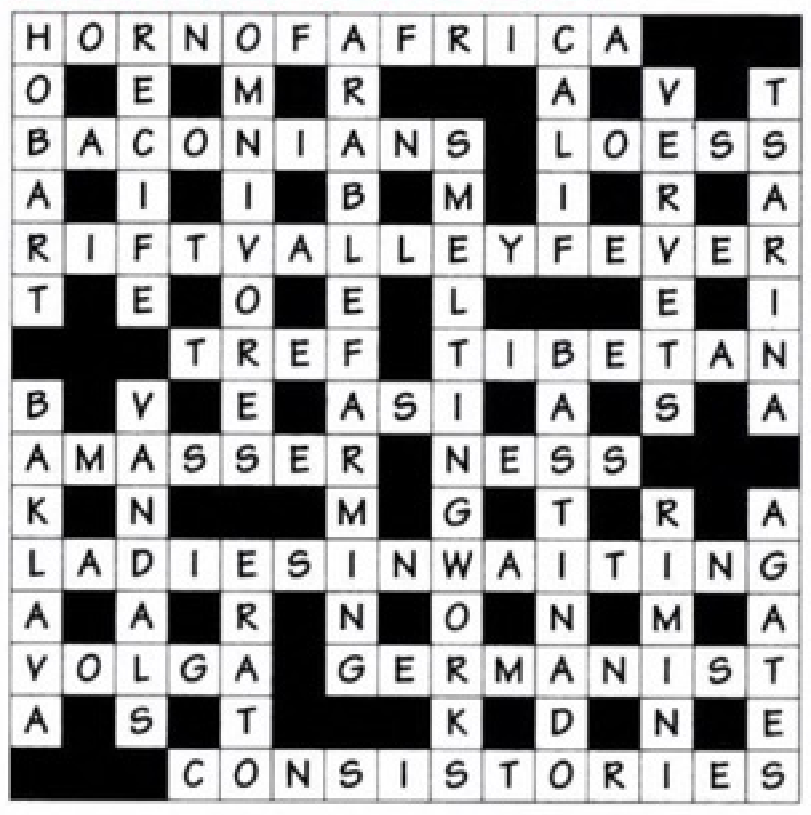
**Across**

**1** Country route following no road (6)
**4** Battle pop singer has all around (8)
**10** African river, island and a state (7)
**11** Philosophical, Thomas is at home in the Roman water to the south (7)
**12** Finish with massive love letter (5)
**13** Columbus' island corrupted, plagued with gold strewn about (9)
**14** Director's finally a celebrity of the first rank! (4,4)
**16** Indians, one thousand per hour, get on board (5)
**18** Siemens, fellow builder of the German war machine (5)
**20** Use masking tape to dispose of gem, somehow, somewhere in Asia (8)
**23** Always a popular piece. No, not poplar! (9)
**24** The Spanish confiscate your vintage alcohol (5)
**26** They worship saints, coming back at ten to start (7)
**27** Fleers of crumbling regimes? (7)
**28** Girl embraces Europeans and an African (8)
**29** Infuriates French city (6)

**Down**

**1** Roman marbles are missing! (3,6,6)
**2** Afro guerrillas shelter villain (5)
**3** Front-led body's atmospheric song service (3-4)
**5** Mountain where a river by the hall in Ireland rises? (6)
**6** These are birds to Americans and can be ringed (7)
**7** New England base for Central UK Tenant Organization (9)
**8** Theories supported by shrinks, they plan development of computer integration (7,8)
**9** Horde's route to embarkation in 16? (7)
**15** Feudal hierarchical progression practised in Belgium? (5,4)
**17** Good people who take English in French town (7)
**19** Kid Susan loses her head. She's from old Dubrovnik (7)
**21** Latin-type anger returns in some degree during Ulster upset (7)
**22** Count South American money; at first don't include Latin central part (6)
**25** Heroin making one sound rough! (5)

## Last month's solution



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## QUICK

**Across**

**1** Northern European country, gaining independence in 1905 (6)
**4** Battle of Senlac Hill? (8)
**10** Africa's most populous state (7)
**11** St Thomas _ _ _ _ _ _ _, Dominican philosopher, c1225-74 (7)
**12** The end (5)
**13** Name of Spanish and Mexican towns and of now-French Caribbean island (9)
**14** Astronomical body important to early navigators (4,4)
**16** Devotees who broke away from Hinduism by eschewing the Vedas in the 16th century (5)
**18** Albert _ _ _ _ (1905-81), Hitler's armaments minister (5)
**20** Asian country created in 1947 (8)
**23** Non-deciduous, perhaps (9)
**24** Base of common alcohol (5)
**26** Philosophers and followers of a magic-based religion established in the 7th century (7)
**27** Originally, royalists who fled from revolutionary France (7)
**28** North-east African (8)
**29** Principal town of the Anjou (6)

**Down**

**1** Not in one's right mind (3,6,6)
**2** Wastrel; miscreant (5,9)
**3** Atmospheric block with homogenous temperature and humidity (3-4)
**5** Turkish peak, on whose slopes traditionally Noah's ark came to rest (6)
**6** South American birds with outrageous beaks (7)
**7** Island and sound off New England (9)
**8** Computer literates who are employed to improve working methods (7,8)
**9** Approach ramp to a ship (7)
**15** Baronial position, for example, in a feudal system (5,4)
**17** Roman city of the French Charente (7)
**19** Inhabitant of Dubrovnik before 1918 (7)
**21** Western Mediterranean region (7)
**22** Official enumeration of inhabitants; its statistics (6)
**25** Solid-hoofed ungulate (5)

# Truth in action

Last September two young British civil-rights activists were arrested in Rangoon. They were marking the eleventh anniversary of the bloody crackdown on the Burmese democracy movement. Rachel Goldwyn now faces seven years in jail after chaining herself to a lamppost and singing a revolutionary song. James Mawdsley was arrested for the third time in two years – he received a sentence of 17 years. Two months before Mawdsley left London for Burma he talked to **Ben Skelton** about what he was doing – and why he was doing it.

James Mawdsley first went to Burma at the beginning of 1997 to teach in the Minthamee camp for displaced Karen people in the jungle of southeast Burma, 20 miles from the Thai border. The Karen are one of Burma's 100-plus ethnic groups, who since World War Two have been fighting for a degree of autonomy. 'They don't want independence,' said Mawdsley. 'They want to remain part of Burma but to be able to look after their people and land.'

Five weeks after his arrival at the Minthamee camp the Burmese army attacked it. 'Every dry season there's an offensive. There's thousands of villages in the area which don't support the Junta, so there's a very good jungle grapevine... We moved closer to the border and the day before the government troops arrived I slipped over the border, followed later by women and children.' Young Karen men and boys were turned back by the Thais, accused of being rebels, not refugees.

Mawdsley returned to Burma in September, via the Htan Hin refugee camp in Thailand. There he discovered that the Minthamee community 'had been blown to bits. There were people in Thai prisons, detention centres, living and working illegally in Bangkok. Some had gone missing. Some were still at the front line in Burma. Some were hiding from the Junta in Burma.' Of the young men turned back at the Thai border, 'five had been sunk in a boat, two had been shot on the river where I used to wash every day. Another stuck his head out of a bush and got it blown off.'

When Mawdsley got to Rangoon he sprayed graffiti, chanted slogans and distributed leaflets, all detailing Junta abuses. He chained himself to a school's gates and ripped up a copy of the state newspaper. After an hour he was arrested, interrogated for eight hours and deported. Thereafter he had to enter the country illegally, on foot.

In April 1998 he went to Moulmein, capital of Mon state. The journey – with the Karen National Union (KNU) – took two weeks, passing through villages left derelict by the Burmese Army. They slept under the stars, eating food hunted by the guerrillas.

His protest in Moulmein followed the same lines, only this time the interrogation lasted eight days and included 19 hours of torture. Mawdsley described to me his feelings when told that he was about to be tortured: 'It was very frightening, but I was also extremely curious.' Among other things, he was handcuffed, blindfolded and made to stand until he collapsed, then beaten and kicked back on to his feet. His experience, he stressed, was relatively mild, though often bizarre: 'They tickled my feet for half an hour. It was unbelievable. They wiped a cat's genitals down my arm. I heard the cat miaow. I was on the floor at one stage and I could see underneath the blindfold and they'd put a huge cockroach on my leg and they all started to titter and giggle like schoolboys.'

Mawdsley was sentenced to five years in jail. Insein Prison was 'hellish, appalling'. 'Physically, I got worse and worse,' he said. 'Mentally, I just got stronger and stronger. But you have bouts of desperation and bouts of calm and strength. At the beginning the desperation is long and the calm short. And at the end they've reversed.' After 99 days in solitary confinement he was deported again.

'It's quite the opposite for the Burmese,' he said. 'They might be sentenced to five years and at the end of their term another five years is put on. There's people held for years without a trial. There's people held in prison for 20 years without ever seeing what they've been charged with.'

One thing which sustained him in jail and inspires all his activism is his religious faith. 'But foremost,' he told me, 'I believe that truth is in actions and, absolutely regardless of what you say or think you believe, your actions determine how close you are to truth. It's not what you say you are. It's not what you think you are. It's what you do.'

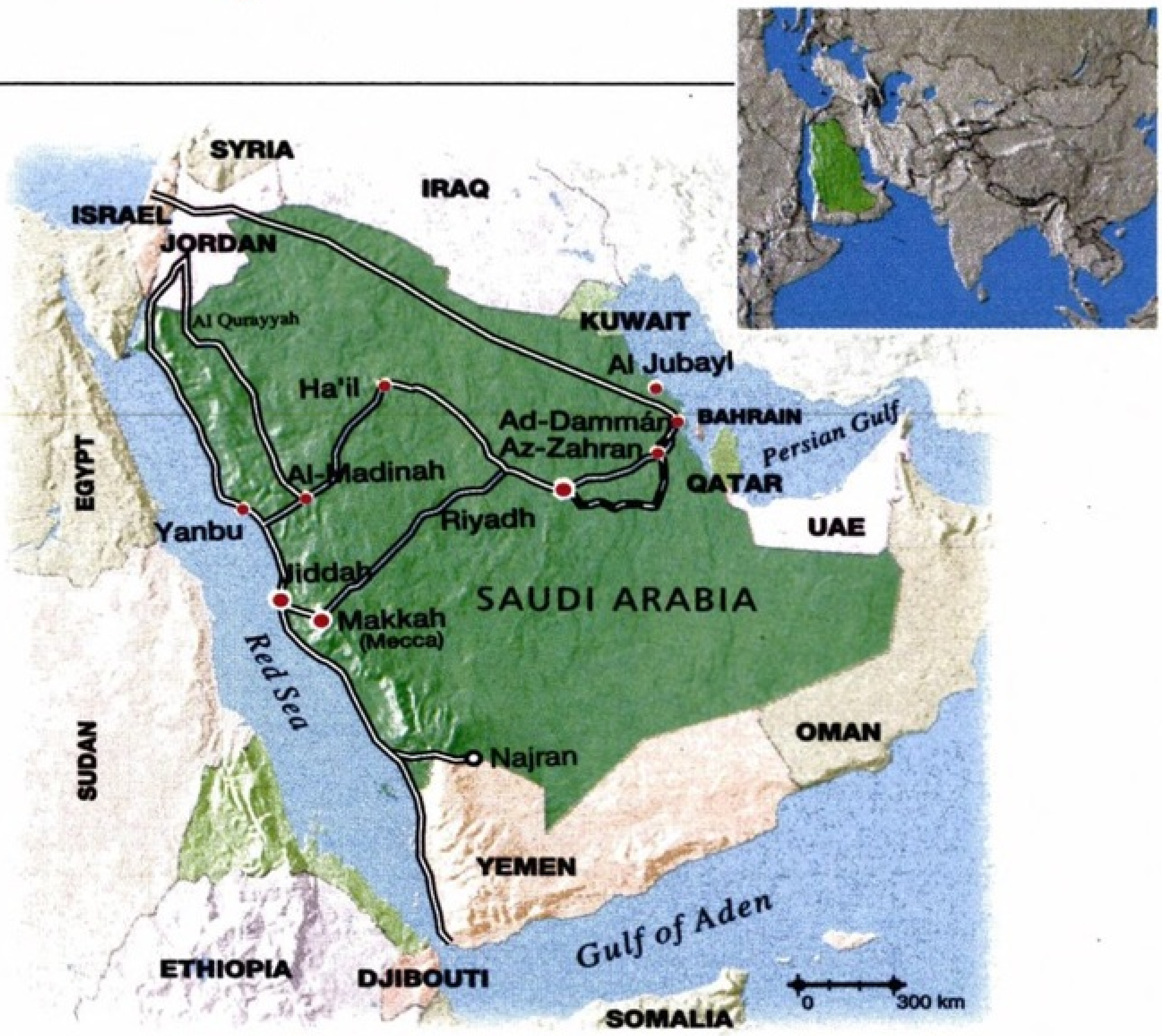
Mawdsley was convinced of the value of his campaign: 'I'm not trying to get democracy in Burma. No one person can do that. All I can do is try to increase the chances of that happening, which I believe I've done in a tiny, tiny way.' And he was determined to keep going back: 'I'm not finished. I intend to build and build and build and it will have a bigger and bigger impact each time.'

**Ben Skelton** is a freelance journalist based in London.

Rendezvous with repression in Rangoon.

# Country profile

# Saudi Arabia



The clichés about Saudi Arabia abound – mysterious, medieval, above all mega-rich. The country's mystique stems principally from the fact that it is a very difficult place to visit – and not an easy place about which to obtain accurate information.

The modern state is largely the creation of one man: Abd al-Aziz bin Abd al-Rahman al-Sa'ud, known as Ibn Sa'ud. The al-Sa'ud family had led a tribal alliance which conquered much of Arabia in the eighteenth century but had lost control of nearly all of it by 1897 when Ibn Sa'ud became head of the family. His talents in diplomacy and military strategy saw him ruling most of the peninsula by 1924. He named the country the Kingdom of Saudi Arabia in 1932.

The new kingdom consisted largely of desert. Outside a few cities and scattered farming oases, it was populated, if at all, by camel-rearing nomads. When the Japanese discovered how to farm oysters in 1930 the Gulf pearl trade collapsed, leaving Saudi Arabia one export commodity (dates) and an annual revenue of about $250,000, nearly half of which came in the form of subsidies from Britain.

Oil changed all that. By 1950, the Kingdom was selling a million dollars' worth of oil a week. Since then, it has grown immensely richer and more powerful; it holds the world's largest proven reserves of crude oil (over a quarter of the total) and is the largest exporter. Despite the fluctuations in the price of oil in recent years, it is a very wealthy state, with vast reserves of money as well as oil. Its citizenry is generally prosperous and provided with free education and healthcare; its infrastructure and services are up to European standards. But the development of the country has been so rapid and on such a spectacular scale that its social and political institutions have failed to keep pace.

Indeed, politically Saudi Arabia is little different now from how it was in 1932. It remains an absolute monarchy, which the King (or in reality now the Crown Prince, Abdullah, since his brother King Fahd is very ill), rules by royal decree. In practice, matters of state are decided by the King in consultation with his ministers, who are mostly his brothers, cousins, nephews etc. There is no constitution, just a Basic Law issued in 1982 which begins: 'Saudi Arabia is a sovereign Arab state with Islam as its religion; God's book and the teachings of His Prophet are its constitution.'

The judicial system has a decidedly medieval ring to it. There is no penal code as such. There are no juries. Apart from fines and imprisonment, the usual punishments are, depending on the seriousness of the crime, flogging, amputation and beheading. Executions are frequent (there were 29 last year) and often carried out in public.

No avenues of dissent are tolerated. Human-rights organizations believe there are hundreds of political prisoners. There are no trade unions, strikes are illegal; women are not allowed to travel in public without male accompaniment and cannot drive. Foreign workers have few rights and are often subject to arbitrary mistreatment. There are no cinemas, no theatres. The press is strictly controlled.

The Saudi state was once described as a 'house built on sand'. Millions of Muslims the world over eagerly look forward to the day the flimsy edifice – dependent on oil and expatriate labour – collapses. The country is as derided in the Arab world as it is in the West for both its wealth and its perceived backwardness. But though no government can rule for long by repression alone, the state appears to be in no immediate danger of collapse. ■

**Sufyan al-Jazzar**

## AT A GLANCE

INTERNATIONAL LABOUR OFFICE

**Leader:** King Fahd (Crown Prince Abdullah is Regent due to the King's illness).

**Economy:** GNP per capita $8,500, assuming a population of c. 11 million (Australia $20,090).

Monetary unit: Riyal.

Utterly dependent on oil exports (75% of budget revenue). The Government controls much of the economy. Plans to diversify and privatize have long been in the offing.

**People:** The latest official figure, a 1995 estimate of just short of 19 million, would give the Kingdom easily the highest population-growth rate in the world. A more reliable figure is generally believed to be around 11 million. Some 4 million of these are foreign workers — around 3 million from South Asia.

**Health:** Infant mortality 24 per 1,000 births (Britain 6 per 1,000). The State provides free healthcare for all Saudi citizens.

**Environment:** Coastal pollution from oil spills is a problem, as are increasing desertification and the depletion of underground water sources.

**Culture:** Arab and Muslim. Most are Sunni, with a Shi'ite minority (around 10%) in the east. Arabic is the official language.

***Sources** The State of the World's Children 1999; information supplied by the author.*

**Previously profiled August 1989**

### NI star rating

| | |
|---|---|
| EXCELLENT | ★★★★★ |
| GOOD | ★★★★ |
| FAIR | ★★★ |
| POOR | ★★ |
| APPALLING | ★ |

## STAR RATINGS

**INCOME DISTRIBUTION** ★★★
The top of the pile contains some of the richest people in the world, but among Saudi citizens oil wealth is quite evenly distributed.
1989 ★★

**LITERACY** ★★★
63% overall, but fewer than half of Saudi women can read and write.
1989 ★★

**SELF-RELIANCE** ★
Everything, apart from oil, is imported.
1989 ★★

**FREEDOM** ★
Political and cultural expression are seriously curtailed and the open practice of any faith other than Islam is illegal.
1989 ★

**POSITION OF WOMEN** ★
Serious restrictions on virtually every aspect of women's lives.
1989 ★

**LIFE EXPECTANCY** ★★★★
71 years. Compares with its poorer neighbour Yemen's 58 and rich-world levels such as Canada's 79 years.
1989 ★★★

## POLITICS

**NI ASSESSMENT** ★
Ordinary citizens have no say in the running of the state. Although Crown Prince Abdullah is seen, by Saudi standards, as somewhat progressive, he will have great difficulty in getting reform past some of his powerful reactionary brothers. Substantial improvement is unlikely in the foreseeable future.

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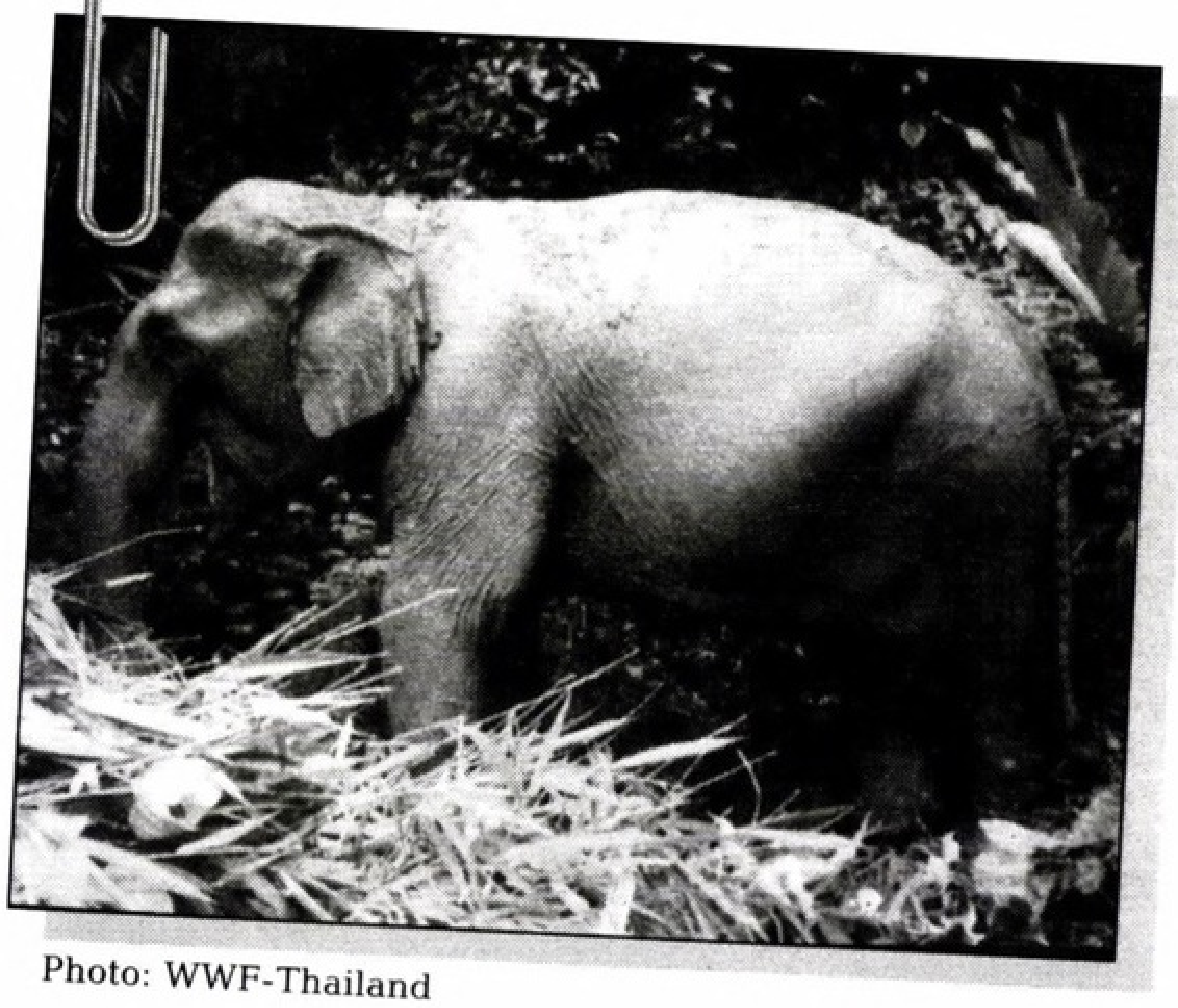

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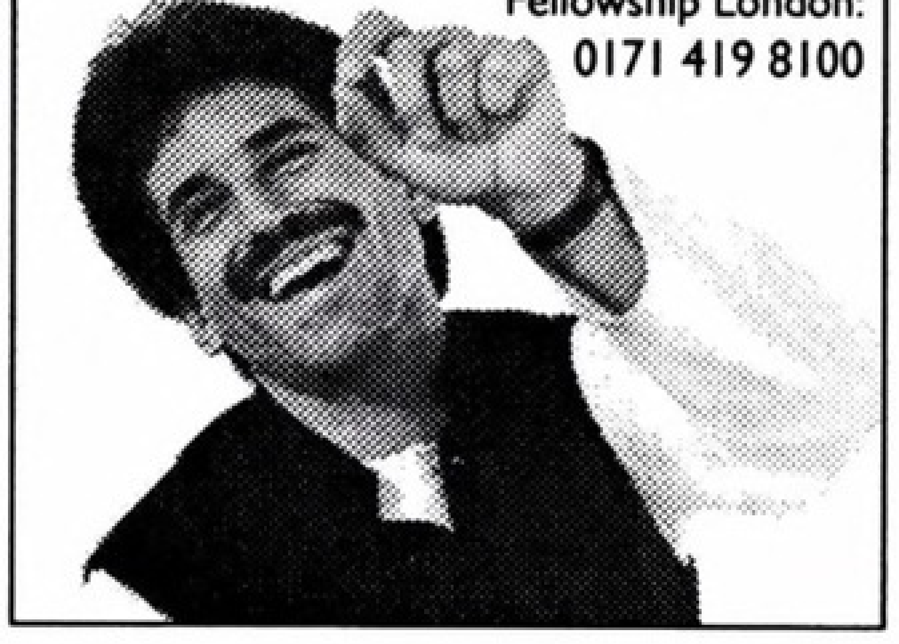

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